CALIFORNIA
OIL WORLD

PUBLISHED TWICE A MONTH

2404 WEST 7th ST.
LOS ANGELES 57, CALIFORNIA

PETROLEUM PUBLISHERS, INC.
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The McKeown Company—New York Representatives
342 Madison Avenue, New York, N. Y.

• FIRST ISSUE
SEPTEMBER, 1953
VOL. 46 • NO. 17
WHOLE NO. 1879

California Oil World is published twice a month at 2404 West 7th St., Los Angeles 57, California. Entered as Second-Class Matter, April 29th, 1944, at the post office at Los Angeles, California, under the Act of March 3, 1879. Subscription price $1 per year in U. S. and possessions, $2 in foreign countries including Canada.

Telephone DUnkirk 2-6218
September 15th, 1953

Observations of Water Damage to Oil Productivity

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Abstract

The possibilities of damage to productivity of oil sands by exposure to water have been indicated by well production histories and core analyses. However, the heterogeneous nature of oil sands has made it difficult to relate the extent of water damage to physical properties of the sands. Permeabilities to brines and fresh water have often been used to indicate the susceptibility of oil sands to damage by water.

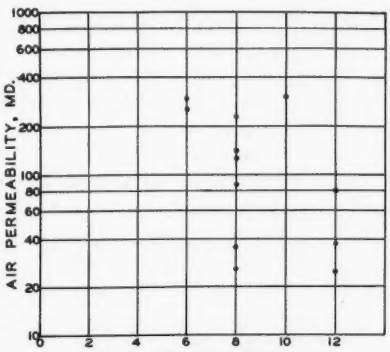
Laboratory and field data are presented which indicate that the flow of oil at moderate pressure gradients may restore effective oil permeabilities of damaged sands to values many times greater than the permeabilities of the sands saturated with water. However, permanent damage to oil productivity can be produced in sands whose structures are disturbed by invasion of water. Possible effects of water upon the permeabilities and structures of oil sands are discussed.

Introduction

It is generally recognized that the productivity of many reservoir sands may be damaged by exposure of the sands to water. However, it has been difficult to relate the extent of such damage to the physical properties of the sands. Core analyses have often included measurements of permeabilities to brines and fresh water, and these measurements have been regarded as indicative of flow behavior in the reservoir.

Oil sands thought to be susceptible to water damage have been described as water-sensitive, and water sensitivity has been measured by the reduction in water permeability which occurs when a sand containing reservoir water is exposed to fresh water[1, 2a]. Core analyses have shown that water sensitivity varies from zone to zone and in degree from almost complete reduction of water permeability to one of negligible effect. However, few laboratory and field data have been presented to show whether any correlation exists between water sensitivity thus measured and the effect of water upon oil productivity.

The purpose of this paper is to present laboratory and field data to aid in the evaluation of water damage to oil sands and to propose possible explanations for the types of damage to oil sands which have been observed. The particular problem which was investigated in the laboratory was to determine whether the permeability of a sand to various waters is related to its permeability to oil in the reservoir. The "reservoir waters" used in the laboratory studies were prepared with salinities matching those of the formation waters and the fresh water used was distilled water.



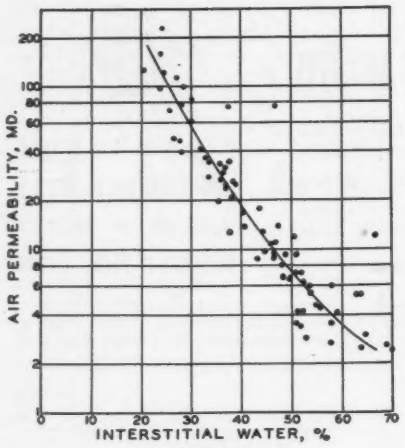
PRESSURE GRADIENT TO RESTORE PERMEABILITY TO OIL IN FRESH WATER DAMAGED SANDS
FIG. 1

DISCUSSION OF LABORATORY AND FIELD DATA

Cores from Field A

The cores selected for the first laboratory studies were from the Stevens Zone which is composed of sands with a high clay content. The reservoir water permeabilities of these "dirty" sands are severely reduced if the sands are exposed to fresh water. The sands are, therefore, regarded as highly water sensitive.

Cores were prepared with oil and interstitial water contents believed to be representative of the saturations of the sands within the reservoir. The procedures used were the "restored state" or capillary pressure methods[3]. The capacities of the sands to conduct oil under these conditions were measured. These permeabilities represent the maximum effective oil permeabilities that would exist in the reservoir. The core samples were then flooded with fresh water and allowed to stand for 64 hours in contact with fresh water. Although the effective permeabilities to oil were low at first, it was



INTERSTITIAL WATER BY CAPILLARY METHOD

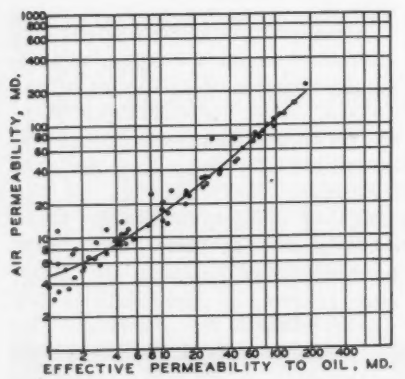
FIG. 2

found that the original capacity to conduct oil was restored within a day's time by flow of oil at pressure gradients across the cores below twelve p.s.i. per inch. Details of the tests are presented in Appendix A.

It is noted from the data presented in Figure 1 that the sands examined exhibited varying degrees of resistance to the recovery of the original effective oil permeability. However, with the application of sufficient pressure gradient, the effective oil permeabilities of the water damaged sands were restored.

The studies of the sands of Field A were conducted with core samples whose original fluid content had been extracted in the laboratory. It was questioned whether the cleaning process had affected the sample's reaction to water. To answer this question an additional study was conducted with a group of oil base cores from the Stevens Zone in Field B.

[1]References at end of paper.



EFFECTIVE PERMEABILITY TO OIL IN PRESENCE OF INTERSTITIAL WATER

FIG. 3

Cores from Field B

Samples of the oil base cores were prepared for study of flow behavior without cleaning and extracting the original liquids of the cores. The free gas present in the cores as received at the laboratory was substantially replaced by oil in the following manner: Propane was passed through the core samples to displace the gas present, and was followed by a flow of oil which absorbed the propane remaining in the cores. Core analyses of adjacent samples indicated that the water content of the oil-base cores as received in the laboratory was not disturbed by this process.

The effective oil permeabilities were measured, and a few pore volumes of fresh water were forced through the cores. The samples were then immersed in fresh water for a day's time. The effective oil permeabilities were again observed, and it was found that the flow of oil at moderate pressure differentials followed by a flow of oil which with oil at 16 p.s.i. recovered an average of 85% of the original effective oil permeabilities. (Appendix B.)

To check the reliability of the initial measurements of effective oil permeabilities, the cores were cleaned and saturated with interstitial water and oil by capillary displacement techniques. Oil permeabilities in the presence of interstitial water corresponded closely to the values obtained prior to cleaning the cores. The data obtained are presented in Appendix B, and indicate that the cleaning procedures employed did not affect the flow behavior of the cores.

Field C

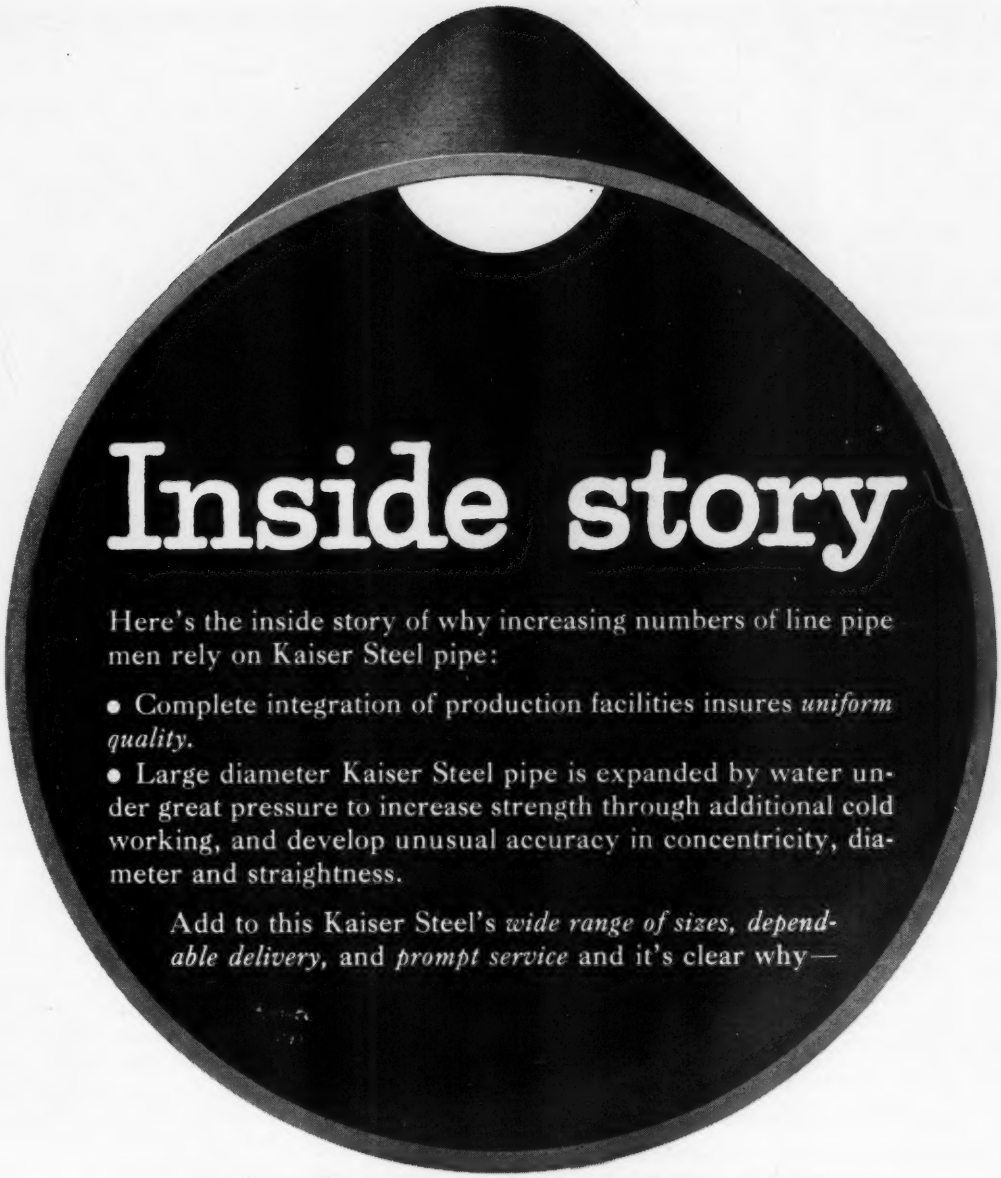
With the development of a small field C over the past few years, considerable field and laboratory evidence have been obtained which indicate that satisfactory oil productivity can be established in water sensitive oil sands containing relatively fresh water. The salinity of the water native to the reservoir is approximately 125 g.p.g. Cl^-. Permeabilities to water of this salinity were observed in the analysis of all core samples from the field, and the data obtained indicate that the productive intervals throughout the field generally have very low permeabilities to reservoir water.

Field evidence of this behavior was first obtained in a step-out well which cut the water table. The oil productive interval at this location appeared marginal and wet with possible oil production in the upper 15 feet. This interval was held open and numerous swabbing attempts were made over a period of two months. However, only small amounts of water with a little oil were obtained. Eight days after the well was last swabbed to the bottom, a depth-pressure test was run. The gage indicated that equilibrium static pressure had not yet been attained due to the extremely low gross productivity index. At this time productive wells in the remainder of the field were flowing 45° API oil from sands of similar permeability characteristics. However, at the edge well location the sands proved to be wet and to have a negligible productivity.

Numerous laboratory studies of the flow behavior to oil and water were conducted with core samples from the productive intervals of the field. Details of the tests are presented in Appendix C. Data from core analysis and the special studies indicate the following average properties of the zone open to production.

Permeabilities, md.			Interstitial Water Content
To Air	To oil with Interstitial Water	To Reservoir Water	% Pore Volume
51	39	8	32

Calculations of completion effectiveness as described by Wade[4] were prepared for all the wells cored. The reservoir oil was initially undersaturated and produced with bottom hole pressures above the bubble point. Therefore, the effective oil permeabilities in the reservoir were assumed to be the same as those observed in the laboratory with interstitial water in place (by capillary pressure techniques). The completion effectiveness factors calculated in this manner ranged from 0.11 to 0.50 with an average of 0.27. These



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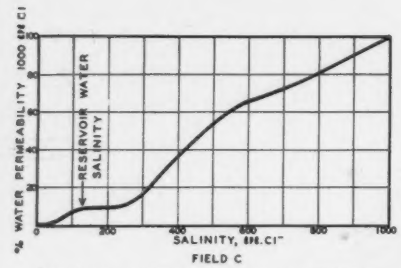


EFFECT OF SALINITY UPON WATER PERMEABILITY

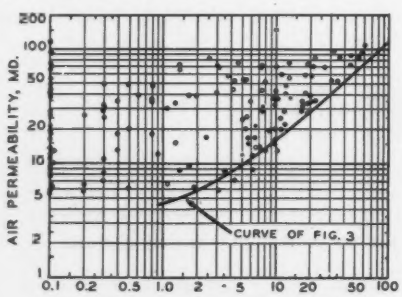
FIG. 4

values are consistent with experienced oil productivity from sands of similar air permeabilities that are not water sensitive. Thus, field evidence indicates that a satisfactory oil productivity can be established in oil sands which have small or negligible permeabilities to water in the reservoir.

Field D

Production history of Field D has added further information regarding the effect of water on the oil productivity of water sensitive oil sands. As water cuts developed in the production and bottom hole pressures dropped below the bubble point, it was noted that the measured productivities during sub-surface pressure-flow rate tests dropped substantially below the observed productivities prior to these tests. It was concluded that when the pumps were pulled, water standing in the tubing was forced into the oil sands and produced an immediate detrimental effect on gross productivity.

Production rates following the sub-surface pressure tests gradually increased to values produced prior to the water damage. Thus the water damage appeared to be only temporary. However, as reservoir pressures declined, the complete recovery of oil productivity became more difficult to obtain under the drawdown available to flow of oil from the reservoir. This behavior is illustrated by the production histories presented in Figure 6.



RELATION OF AIR PERMEABILITY TO RESERVOIR WATER PERMEABILITY

• CORES FROM AREA NEAR CENTER OF FIELD
• CORES FROM BALANCE OF FIELD

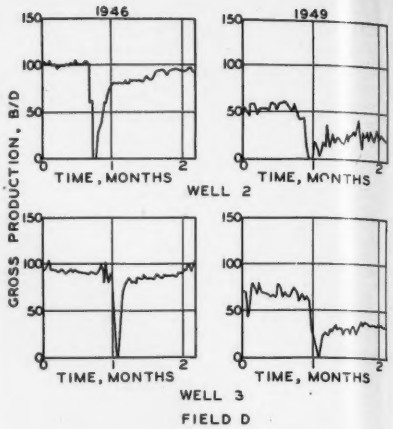
FIG. 5

The analysis of cores from the producing intervals indicated that the sands were sensitive to water. Furthermore, tests of the effect of fresh water on oil permeabilities showed that water damage could be overcome in time by the flow of oil under sufficient pressure gradient. Details of the field and laboratory data are presented in Appendix D.

Interpretation

The sands in each of the fields discussed above are well consolidated and contain clays which seriously affect their ability to conduct fresh water. A large portion of the productive oil sands of Field C appear to offer considerable resistance to the flow of the low salinity reservoir water. Yet the productivities of the wells in this field appear to be consistent with the average performance of clean oil sands of similar air permeabilities. The data presented for Fields A, B and D indicate that effective oil permeabilities will be restored at moderate pressure gradients in water damaged oil sands that exhibit water sensitivity.

It is inferred that the restricted flow capacity to water displayed by these sands is due primarily to the fact that the fines and clays present in the porous structures are preferentially water wet. The silts and clays along the pore channels bond water normally associated with their hydrated structures. The amount of water held by clay and the degree of dispersion of the clay particles in water increase as salinity of the water is reduced. The dispersed particles within the water-filled pore channels move with the flow of water to positions which restrict water permeability. This behavior is indicated by permeability changes which occur when the direction of the flow of fresh water in water sensitive sands is reversed. An immediate increase in water permeability is noted with a change in direction of flow. However, with continued flow, the water permeabilities drop very rapidly to about the previous values.

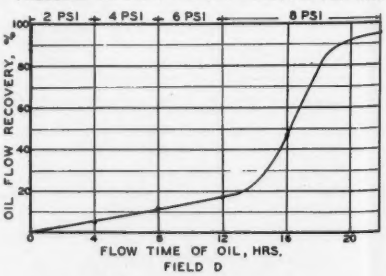


PRODUCTION HISTORY OF WELLS EXPOSED TO WATER IN WELL BORE

FIG. 6

The studies previously described show that oil permeabilities and saturations within the water flooded sands can be restored. It appears that with the application of sufficient pressure differential across the sand body, the oil-water interface can be forced through the larger pore channels. The water-wet particles do not pass through the oil-water interface into the oil and, therefore, are confined within the volume of interstitial water normally associated with the porous structure. The oil remains free of water wet particles and flows through capillary channels lined with the water which surrounds the entire grain structure.

It was reasoned that if the above mechanism occurred, then a reversal of the flow behavior could be produced by conversion of the bentonites (water-wet clays) within the sands to bentones (oil-wet clays). Laboratory tests described in Appendix E were conducted to study this possibility. It was observed that dry oil permeabilities of cores were severely reduced by conversion of



RECOVERY OF OIL PERMEABILITY AFTER WATER DAMAGE

FIG. 7

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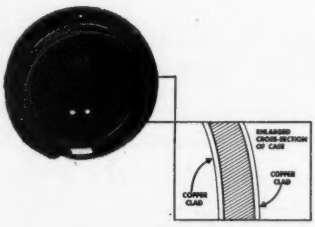

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the clays to oil wet types. In addition, the conversion of clays within the sands to oil-wet types produced a marked increase in the capacity of the sands to conduct fresh water, as illustrated in Figure 8. Thus it is concluded that the presence of particles within the porous structure of the sands can seriously interfere with the flow of a liquid which preferentially wets the surfaces of these particles.

The permeability of sands to reservoir water appears to be dependent upon the amount and distribution of reactive solids within the porous structure of the sands and the salinity of the reservoir water. Therefore, permeabilities to the reservoir water may not be indicative of the effective oil permeabilities in the reservoir.

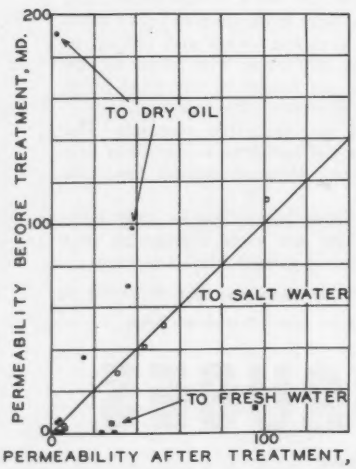
All of the sands previously discussed were well consolidated, and though they exhibited extreme sensitivity to water, their consolidated structure was not destroyed by exposure to fresh water. Observations of flow behavior of thousands of cores during the past ten years have indicated that water sensitivity of reservoir sands may be brought about by many factors other than the behavior of clays lining pore channels of consolidated sands. These may be classified as follows:

a) Waters of various salinities may disturb cementing material and cause partial disintegration of the sand structure.

b) Clays may be present as lumps or streaks in sands and disturb the sand structure when contacted with water of various salinities.

c) Friable or semi-consolidated oil sands may contain large quantities of silts and fines which are water wet in the reservoir. The content of clays of swelling type may be negligible and differences in permeabilities to brine and fresh water may be small. Thus, the sands may not appear to be water sensitive. However, an increase of water saturation in such sands may sharply reduce the gross productivity of the structure due to movement of particles with the flow of water. The flow of either brine or fresh water will harm such a sand structure.

Where invasion of water will alter the sand structure as in (a), (b) and (c), it cannot be expected that the flow of oil will regain the native productivity of the reservoir sand. In these instances the specific permeability of the sand structure is reduced, and the effective permeabilities to all fluids are reduced accordingly.



Effect of water-wet and oil-wet surfaces in cores upon flow behavior. Fig. 8.

Appendix A—Studies of Cores From Stevens Zone, Field A

Cores from the Stevens Zone, Field A, were restored with oil and water content by capillary displacement at 16 p.s.i. Cores were initially saturated with water of 1000 grain per gallon chloride salinity. The oil used was kerosene. After measurements of effective oil permeabilities in the presence of interstitial water were obtained, the samples were flooded with fresh water. The effect of water damage on oil permeabilities was then observed, and the data obtained are presented on Table 1. The effect of pressure gradient on the recovery of effective oil permeability is illustrated in Figure 1.

The oil and water saturations and effective oil permeabilities were again observed on the cores following capillary displacement of salt water by oil at a pressure of 12 p.s.i. The cores were resaturated with salt water and subjected to displacement by oil at a capillary pressure of 6 p.s.i. The cores were again cleaned and then saturated with distilled water and placed in the capillary displacement cells at a pressure of 6 p.s.i. Data obtained are presented in Table 2.

Permeabilities, md.			
To Air	To Oil With Interstitial Water	To Reservoir Water	Interstitial Water Content—% Pore Volume
51	39	8	32

CONCLUSIONS

1. Water sensitivity does not directly indicate the effect of water on oil productivity.
2. The oil productivity of some consolidated water sensitive oil sands can be restored by flow of oil after invasion of water. The ability to overcome the water damage appears related to the drawdown available for the flow of oil.
3. The permeability to reservoir water may not be indicative of the effective oil permeability in the reservoir.

Reservoir water permeability should not be considered as a reference for relative permeability calculations. Instead, it is suggested that specific permeability or effective permeability to oil in the presence of interstitial water be regarded as reference values for relative permeability calculations.

Appendix B—Studies of Cores From Stevens Zone Field B.

Appendix C—Studies of Flow Behavior of Cores From Field C

Core analysis of 173 samples of oil sands from the production interval (16 to 30 feet net oil sand) of 11 wells provided the following average properties of the zone.

Restored state studies were conducted with the cores initially saturated with synthetic reservoir water of chloride salinity (125 gpg), which approximates the salinity within the reservoir. Water was displaced from the cores with kerosene at a capillary pressure of 16 p.s.i. The viscosity ratios of the oil and water used in the laboratory approximated the viscosity ratios in the reservoir. The data obtained by these studies are presented in Figures 2 and 3.

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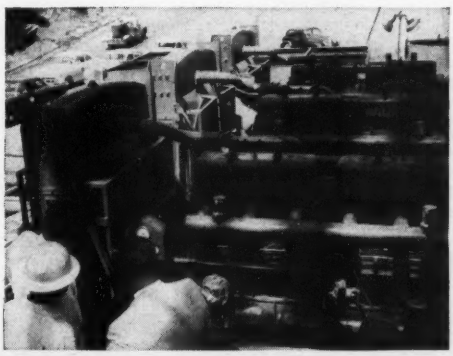

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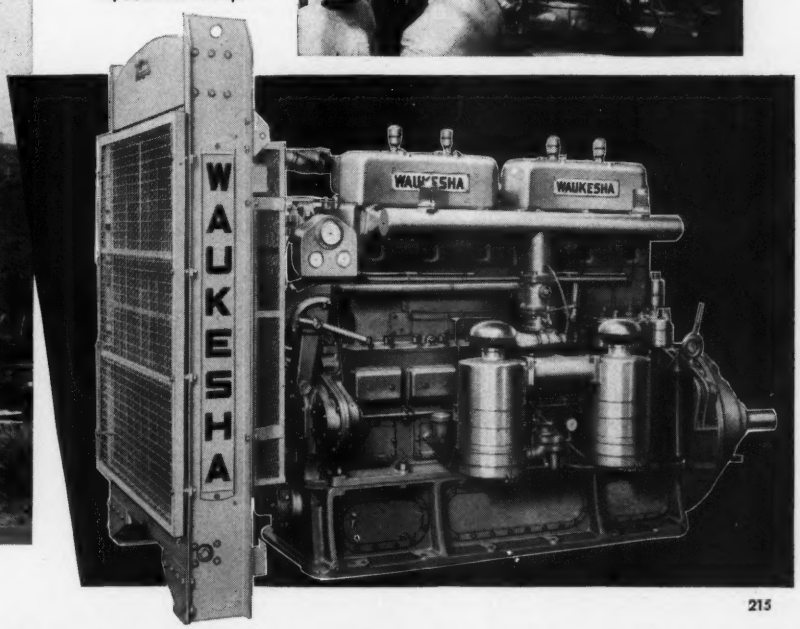

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average behavior illustrated in Figure 4. Permeabilities to synthetic reservoir water were measured on all cores. The data obtained are presented in Table 5.

It is noted that the majority of the cores with high permeabilities to the reservoir water were from a relatively clean streak of sand found near the center of the field.

The lack of relationship between reservoir water permeabilities and the reservoir oil permeabilities is further illustrated by the data of Table 6 and Figure 5. On the other hand, a reasonable relationship between air permeability and effective oil permeability in the presence of interstitial water is indicated by the data of Figure 3.

Appendix D—Field and Laboratory Data of Field D

Production histories preceding and subsequent to well tests are presented in Figure 6.

Laboratory data of the flow behavior of cores from the producing intervals of Field D are presented in Table 8. Cleaned core samples were saturated with a synthetic reservoir water of salinity 585 gpg Cl^-. Permeabilities were measured to the flow of synthetic reservoir water (K_{rw}) and to fresh water (K_w). The sands were dried and resaturated with the synthetic reservoir water. Oil was then placed in the core samples by capillary displacement at 16 p.s.i. The effective oil permeabilities (K_o) were measured and the cores then invaded by fresh water. Observations of the recovery of oil permeability were then made. A plot of the average behavior of the effective oil permeabilities is presented in Figure 7.

Appendix E—Studies of the Effects Upon Oil and Water Permeabilities Produced by the Conversion of Clays Within Water Sensitive Sands to Bentones.

The data obtained in this study are presented in Table 9 and the procedures employed are as follows:

The cores were cleaned and dried and permeabilities to dry air and dry oil obtained (lines a and b, Table 9). The cores were recleaned, saturated with brine and permeabilities to brine and fresh water observed (lines c and d, Table 9). To

Table 1—Flow Behavior of Stevens Zone Sands Field A.

Sample Number	Permeabilities, md. To Air K_a	To Oil with Interstitial Water	To Oil Directly after Fresh Water Damage	Total Hours of Oil Flow	Maximum Pressure Gradient psipi	Final Oil Permeability (K_o) md.
1	25.	6.4	0.0	44.	12.	3.8
2	26.	5.6	0.4	35.	8.	5.6
3	36.	9.5	0.2	26.	8.	9.8
4	38.	25.	1.8	42.	12.	21.
5	82.	61.	1.3	54.	12.	58.5
6	88.	67.	2.8	44.	8.	69.
7	128.	99.	4.5	51.	8.	99.
8	142.	107.	6.1	42.	8.	105.
9	234.	192.	9.0	56.	8.	197.
10	259.	198.	11.3	62.	6.	199.
11	299.	243.	7.4	61.	6.	241.
12	306.	203.	6.8	61.	10.	207.

Table 2—Capillary Pressure Studies, Stevens Zone Cores, Field A.

Sample Number	After Displacement of Brine with Oil at a Capillary Pressure of 12 psi: Permeabilities, md. To Air (K_a)	To Oil With I.W. (K_o)	Interstitial Water (I.W.) % Pore Volume	After Displacement of Brine by Oil at 8 psi: K_o	I.W.	After Displacement of Fresh Water by Oil at Capillary Pressure of 8 psi: K_o	I.W.
1	25.	5.9	42.4	4.8	51.1	5.6	47.7
2	26.	7.0	36.9	4.6	48.3	7.0	45.0
3	36.	13.	39.0	10.	49.1	15.	46.4
4	38.	21.	42.8	23.	46.6	23.	46.3
5	82.	61.	33.3	58.	35.9	59.	38.1
6	88.	69.	33.3	68.	36.6	70.	34.6
7	128.	99.	29.7	86.	35.3	99.	31.6
8	142.	104.	30.7	98.	35.4	107.	34.9
9	234.	185.	26.7	180.	30.8	188.	27.6
10	259.	196.	26.4	200.	28.6	198.	29.0
11	299.	229.	23.1	229.	28.5	226.	28.9
12	306.	198.	29.8	197.	32.1	200.	28.8

Table 3—Behavior of Oil-Base Cores Prior to Extraction

Sample No.	Permeabilities to oil, md. After Propane	—Following water damage— Initial	K_o (1)	K_o (2)	K_a md. (3)	Final Saturations % Pore Volume Oil	Water
1	11.	0.3	4.6	13.	26.	53.	47.
2	5.	0.2	0.7	3.5	10.	42.	51.
3	58.	0.5	51.0	58.0	84.	61.	38.
4	2.5	0.2	0.7	2.0	6.5	45.	43.
5	3.3	0.2	0.9	2.4	6.7	47.	52.
6	3.7	0.4	2.3	2.7	8.7	46.	51.
7	5.2	0.9	3.9	4.6	14.	46.	50.
8	10.	1.0	6.8	8.5	16.	51.	46.
9	6.4	0.7	4.6	7.0	14.	57.	43.
10	7.5	0.3	3.6	5.7	14.	53.	47.
11	7.1	0.4	3.3	4.3	14.	47.	49.

(1) Effective permeability to oil after 18 hours of flow (11 hrs. at 4 psi, 5 hrs. at 8 psi, 2 hrs. at 12 psi, pressure gradient across cores, 1 inch diameter, 1¼ inches in length).
(2) Effective permeability to oil after capillary displacement at 16 psi for eight days.
(3) Air permeability of cores after extraction of oil and water listed in columns (4) and (5).

Table 4—Properties of Cleaned Cores with Saturations Restored by Capillary Displacement of Water with Oil at 16 psi

Sample No.	Permeabilities, md. To Air	To Oil With Interstitial Water	Final Saturation % Pore Volume Oil	Water
1	26.	16.	55.	45.
2	10.	4.4	51.	49.
3	84.	66.	60.	40.
4	6.5	2.3	50.	50.
5	6.7	2.8	50.	50.
6	8.7	3.6	51.	49.
7	14.	6.3	48.	52.
8	16.	9.0	53.	47.
9	14.	7.4	51.	49.
10	14.	7.1	49.	51.
11	14.	7.8	53.	47.

The synthetic reservoir water used in resaturating the core samples had a salinity of 1000 gpg. chloride.

Table 5—Relationship of Reservoir Water and Air Permeability

% of Core Samples	Permeability to Reservoir Water
36	less than 0.1 md.
21	1 to 10% of air permeability
30	10 to 50% of air permeability
13	50 to 60% of air permeability

Table 6—Typical Properties of Oil Sands from Field C.

Core Sample Number	1	2	3	4	5	6	7	8
Permeability to air, md. (K_a)	16.	33.	40.	53.	76.	80.	118.	150.
To oil in presence of interstitial water, md. (K_o)	8.9	17.	20.	32.	27.	74.	112.	117.
To reservoir water, md. (K_{rw})	1.8	0.0	3.8	5.4	0.6	32.	26.	73.
To fresh water, md. (K_w)	0.0	0.0	0.2	0.9	0.0	1.1	4.4	4.5
Porosity, %	23.7	20.1	20.	20.	24.2	19.8	19.4	22.9
Interstitial water, % pore volume, (I.W.)	39.0	33.9	33.3	31.	46.	26.3	20.3	23.5

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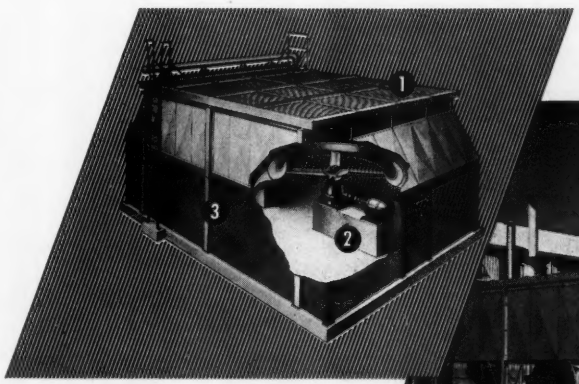

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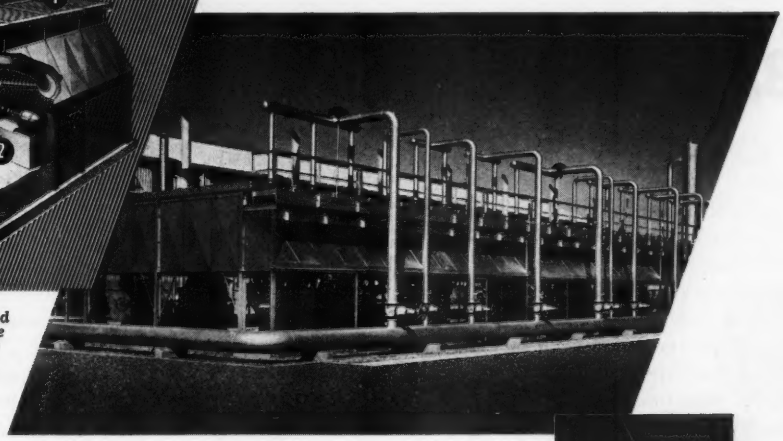

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convert the clays within the sand structure to oil-wet and oil-dispersible bentones, the tests were continued as follows:

Quaternary ammonium compounds were added to the fresh water; a few pore volumes were passed through the cores and the cores were allowed to stand saturated overnight. The cores were then dried by high vacuum at 110° F. and resaturated with oil containing polar compounds (kerosene + 10% toluene). After standing overnight, measurements were made of the oil permeabilities (line e, Table 9). The cores were then cleaned by flow of acetone and application of high vacuum. After resaturation to brine, permeabilities were again measured to brine followed by fresh water, (lines f and g, Table 9). The permeability behavior of the sands before and after treatment with the quaternary ammonium compounds is illustrated in Figure 8.

Table 7—Observations of productivity indexes inferred from production history and as calculated from well test data. (The producing intervals were exposed to produced water immediately preceding well tests. Wells were cutting 4 to 8%).

		TEST DATA		INFERRED PRODUCTIVITY INDEX BEFORE TEST		
Date	Well	Rate during Test b/d	Observed P.I.	Rate Before Test b/d	Producing Pressure at Pump	Inferred Productivity Index
1946	1	41	0.21	64	235	0.33
1947	1	11	0.05	14	109	0.2[illegible]
1946	2	76	0.21	100	370	0.41
1947	2	21	0.12	92	210	0.80
1949	2	18	0.07	110	200	0.41
1946	3	70	0.23	92	370	0.40
1947	3	45	0.18	65	170	0.31
1949	3	31	0.15	67	300	0.59
1947	4	105	0.26	142	340	0.47
1948	4	87	0.20	120	320	0.37

Table 8—Laboratory Studies of Sands from Field D

Sample No. / Permeability, md.	1	2	3	4	5	6	7	8	9	10	11
To Air, K_a	50.0	29.4	20.8	9.90	19.3	41.0	7.45	13.8	42.0	43.0	50.5
To Reservoir Water, K_{rw}	45.0	25.2	18.2	7.60	15.5	34.4	6.50	11.9	37.2	39.0	44.0
To Fresh Water, K_w	14.6	7.75	9.15	4.30	3.66	14.0	4.30	6.75	11.7	11.2	10.3
To Oil with Interstitial Water K_o	49.0	27.2	19.4	8.15	17.8	36.4	7.30	12.5	39.8	41.5	46.5

Table 8—Laboratory Studies of Sands from Field D (Continued)

To Flow of Oil Following Damage by Fresh Water—											
K_o, 2 psi, 4 hrs.	10.9	3.20	0.07	0.	0.17	0.68	0.	0.11	0.55	0.68	0.69
K_o, 4 psi hrs.	15.8	6.25	0.36	0.03	0.71	3.08	0.18	0.37	2.50	4.05	2.34
K_o, 6 psi, 4 hrs.	17.6	8.70	0.69	0.40	2.04	4.45	0.61	0.65	6.35	6.35	4.25
K_o, 8 psi, 4 hrs.	26.0	14.5	2.48	1.29	8.90	9.85	2.32	2.68	25.6	23.4	24.6
K_o, 8 psi, 10 hrs.	43.5	27.0	18.1	7.50	16.6	35.2	7.45	11.6	37.2	41.0	45.5

Table 9—Effect of Wetting Properties Upon Flow Behavior of Water Sensitive Oil Sands

Sample No. / Permeability, md.	1	2	3	4	5	6
(a) To air, K_a	91.0	99.5	7.40	8.60	46.5	197.
(b) To oil, K_o	70.0	98.0	5.45	6.40	36.6	191.
(c) To reservoir water, K_{rw}	41.0	51.5	3.10	3.68	29.6	136.
(d) To fresh water, K_{fw}	0.17	0.13	< 0.10	< 0.10	5.45	11.7
Permeability after treatment with quaternary ammonium compounds, md.						
(e) To oil, K_o	36.2	37.8	2.82	3.86	15.4	1.88
(f) To reservoir water, K_{rw}	44.0	53.0	6.95	6.00	31.4	126.
(g) To fresh water, K_{fw}	23.8	30.8	3.70	4.70	29.2	96.0

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Bay Petroleum Completes New Refinery

Bay Petroleum Corporation completed a multi-million dollar expansion and modernization program at its refinery at Denver, Colo., recently when its new UOP Fluid Catalytic Cracking unit went on stream.

With installation of the cat cracker and extensive revamping of some existing facilities, Bay's Denver refinery is now one of the largest in the Rocky Mountain region, and puts Bay in the position of making available to motorists in its trade area high octane gasoline designed specifically to meet the needs of today's and tomorrow's high-powered automobiles.

The new cat cracker is designed for 3,528 barrels per stream day of gas oil fresh feed at 76 per cent conversion with a coke-burning capacity of 3,770 pounds per hour. It is producing gasoline which has an octane rating above 91 without the addition of tetraethyl lead.

Universal Oil Products Company, Des Plaines, Ill., designed, engineered and licensed the new cat cracker which already has become an important landmark on the skyline of the Mile High City.

UOP engineers also redesigned and engineered the revamped facilities, which went on stream at the same time as the cat cracker. These include a crude topping unit, a visbreaker-vacuum unit converted from a Dubbs thermal cracking unit, and gas concentration and polymerization units. The poly unit was redesigned to produce 315 barrels per stream day of 10-pound polymer.

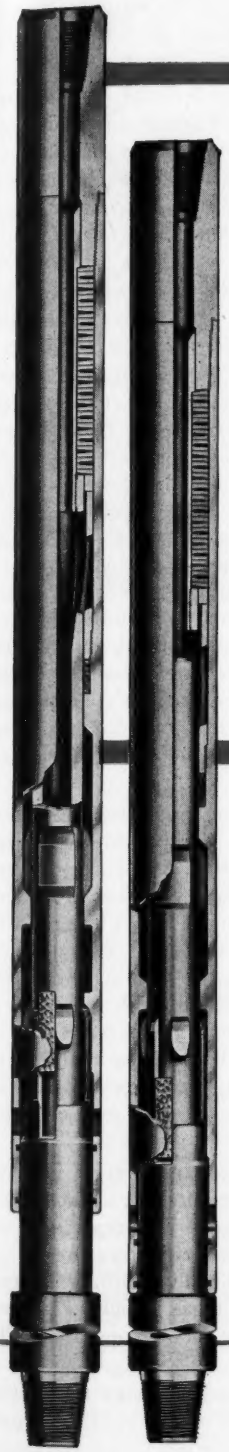
The new refinery operation is based upon charging 11,000 barrels per stream day of a blend of Wilson Creek, Lance Creek and Wellington crude oils to the revamped topping unit.

The cat cracker was constructed by Procon Incorporated, also of Des Plaines. Procon engineers also handled the revision of the poly gas concentration facilities.

Through its expansion and modernization program, Bay has increased its overall yield of refined petroleum products and has greatly improved the quality of these products.

In the refinery's present operation, topped crude is being processed in a visbreaker-vacuum flashing operation in the revamped Dubbs thermal cracker. Gas oil is being used as a charge stock to the cat cracker, and the gas and gasoline from visbreaking is stabilized in the revamped gas recovery system. Visbreaker bottoms are blended with

No Wonder the Shaffer-Waggener Bumper Safety Joint is Revolutionizing Today's Drill String Protection!



Locked Position

Tripped Position

THE ECONOMY AND SAFETY OF 2 TOOLS IN 1

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On California's deepest well, a Shaffer-Waggener Bumper Safety Joint running in the drill string just above the drill collars, proved invaluable in recovering the drill string from a depth of 18,136 ft. When the string became stuck, only 2¾ turns of back torque were required at the table to release the Safety Joint portion of the tool, permitting immediate recovery of all drill pipe. Fishing jars were then placed in the recovered string, with the recovered portion of the Bumper Safety Joint on bottom, and this string was run back into the well. The tool was easily reconnected to the Safety Joint portion on the fish, and after jarring the drill collars and bit loose, the entire string was recovered—*from approximately 3½ miles deep*—leaving a completely clean hole!

On another well a Shaffer-Waggener Bumper Safety Joint was in the string between drill collars and drill pipe when the string parted going into the hole, dropping over 2,400 ft. of pipe and drill collars 5,000 ft. to the bottom of the well at 16,883 ft. First, the top of the fish was gripped with a socket and the Bumper Safety Joint released, permitting immediate recovery of 2,100 ft. of drill pipe. Then the upper part of the Bumper Safety Joint was run back into the hole below a set of jars, reconnected to the lower part of the Bumper Safety Joint and—after jarring—the drill collars were completely recovered *from over 3 miles deep*, leaving the hole completely clean!

Besides operating successfully at even great depths, this tool takes slant holes in stride—has been used efficiently in extreme directionally-drilled wells with a slant of 60°!

In fact, on job after job—from the shallowest to the deepest—the Shaffer-Waggener Bumper Safety Joint is bringing entirely new standards of safety, efficiency and protection to modern drilling operations!

Combines 2 tools in 1

The Shaffer-Waggener Bumper Safety Joint is the *only* tool of its kind—the ONE tool that combines BOTH *jarring* and *releasing* action—each under the full control of the operator. And not only does it combine in *one* tool the protection usually requiring several tools, but it also provides advantages *found in no other single tool or combination of tools!*

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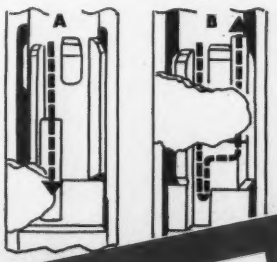
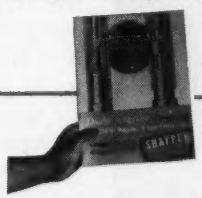
To use the tool as a Bumper Sub it is only necessary to slack the weight of approximately 2000 ft. of drill string upon the Bumper Safety Joint, thus actuating a tripping mechanism which trips *automatically*, allowing the tool to strike a sharp downward blow. Raising the string then *automatically* resets the tool for another blow—and blows can be struck repeatedly and continuously by simply raising and lowering the drill string. It's simple, positive, *automatic!*

To use as a Safety Joint for quick release in the event the stuck pipe cannot be loosened, simply trip the tool and apply left torque as the string is slowly raised (A). The reverse torque rotates the drive keys into an unlocking slot (B) so that, by simply continuing to raise the string, complete release is effected. Further, the recovered portion of the tool can be used on the bottom of a fishing string and easily reconnected to the portion in the hole for simplified recovery operations.

As a Safety Joint the tool will not release until it is tripped. Therefore, it will transmit full torque loads in *either* direction—a definite advantage over conventional Safety Joints.

Two tools in one means simplified maintenance, simpler design, plus substantial savings in operating costs.





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cat cycle oil to meet No. 6 fuel oil specifications. The gas recovery system utilizes as much existing equipment as possible. The polymerization of the C_3 and C_4 olefins is effected in the revamped poly plant, which consists nearly entirely of equipment from the original unit.

Blended crude oils are charged through heat exchangers to a pre-flash column, where light straight run gasoline is taken off overhead. Bottoms from the pre-flash column are pumped through a heater to the No. 1 crude column. There, a naphtha cut is taken off overhead and mixed with the light straight run and kerosene is removed as a side-cut.

Bottoms from the No. 1 crude column are charged through a second heater to the No. 2 crude column, where diesel oil and gas oil are taken off as sidecuts. Reduced crude from the bottom of the No. 2 crude column is charged through the visbreaker heater into the flash chamber.

Vapors from this vessel are sent to a fractionating column, where the visbreaker gas and gasoline are taken overhead and sent to the cat cracker gas concentration unit. Visbreaker gas oil emanating from the bottom of the fractionating column is heat exchanged against crude, cooled and sent to storage.

Bottoms from the visbreaker flash chamber are sent to a vacuum column, where gas oil is separated from the visbreaker pitch in a flashing operation. Vacuum gas oil is condensed and sent to storage together with the visbreaker gas oil.

Visbreaker pitch from the bottom of the vacuum column is blended with cycle oil from the cat cracker unit to make the No. 6 fuel oil.

Vacuum gas oil, visbreaker gas oil and atmospheric gas oil produced in the crude unit combine to comprise the charge stock to the new cat cracker.

The high conversion cat cracker is of the latest UOP design. Gases and gasoline produced in this new unit are sent to the gas concentration plant, where all the gasoline portions from the gases are recovered as well as propane-propylene and butane-butylenes for the poly plant charge. All light gases are rejected and are vented to refinery fuel.

Propane and propylene recovery is very high, running 86½ per cent, while butane and butylene recovery is essentially 100 per cent.

Gases are compressed to a high pressure and sent to an absorber. Liquid emanating from interstage and high pressure receivers goes to a stripper, where ethane, H_2S and lighter materials are removed. Liquid from the low pressure receiver is used as lean oil over the primary absorber. Rich oil from the absorber and vapors from the stripper are recirculated through the high pressure receiver for reabsoption.

The recovered liquid is debutanized. Overhead fractions of C_3 and C_4 are sent to the poly plant. Bottoms go to cat cracked gasoline storage. Recovery of C_3 and C_4 and rejection of C_1 and C_2 materials is independently controlled.

A caustic and water wash system was provided to remove materials which might poison the poly catalyst. Finned tube sections, taken from other units in the refinery that were idle, were placed on the charge exchanger, charge heater and effluent cooler, and provision was made for using the catalyst chamber effluent as part of the liquid recycle because the existing fractionating columns did not have sufficient capacity to handle the required amount of the propane and butane recycle fluid. For the same reason, the de-ethanizer column was moved from its position following the catalyst tower to the depropanizer overhead.

After caustic and water wash, the fresh feed is pumped through the effluent exchanger and charge heater into the catalyst chamber. Effluent passes through the charge exchanger, where it splits. One portion goes directly to the depropanizer and part goes through the cooler into the effluent receiver, where it splits again. Part of the material is sent to the depropanizer and part is picked up by a pump and used as recycle fluid.

As much propane recycle is used as is permitted by the capacity of the depropanizer. The remainder of the depropanizer overhead is charged to the de-ethanizer, where it is split into gas which is vented to the refinery fuel system and LPG for sale.

Depropanized bottoms enter the poly stripper, where excess butane is removed overhead and 10-pound polymer is produced as a bottoms product.

Overall view of the newly modernized refinery of Bay Petroleum Corporation in Denver. Dominating the center of the picture is the refinery's new UOP Fluid Catalytic Cracker.

How important is a penny?

At some time or another when you've bought gasoline you have probably wondered how much less a gallon would cost if our profit were taken out of the price.

Actually if the Union Oil Company made no profit on any of its products, the price of "76" or "7600" gasoline would be reduced by a little more than one penny per gallon.

With this "penny-plus" we have to meet today's inflated cost of finding and developing new oil reserves. With it we also have to pay the additional amounts necessary to replace worn-out equipment such as pipe lines, refineries and trucks.

Furthermore, out of this fraction more than a penny, we have to pay the 40,362 owners of the Union Oil Company. For without profit there would be no incentive for these men and women to put up their money to buy the tools so vital in increasing the productivity of our 8,756 employees.

So, as you can see, a penny is *mighty* important to us. As a symbol of the small profit we make per gallon of product sold it is far overshadowed by the 8¾¢* tax per gallon the Federal and State governments collect from both of us.

*Computed on basis of gasoline sold in California.

This series, sponsored by the people of Union Oil Company, is dedicated to a discussion of how and why American business functions. We hope you'll feel free to send in any suggestions or criticisms you have to offer. Write: The President, Union Oil Company, Union Oil Bldg., Los Angeles 17, California.

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THE GRAPEVINE

Like multi-colored rockets, there recently swished through this ordinarily composed village, a pair of pyrotechnic Texans who, after a few mildly explosive but altogether enjoyable manifestations, departed in a shower of waning sparks that finally faded out entirely, leaving us home folk nothing but some very pleasant memories. We speak, naturally, of the visit of that inseparable duo, Alvin "Dutch" Zwerneman, proprietor of Atlas Pipe, Inc., and Ed Trout, vice president of Lufkin Foundry & Machine Company, who jointly and severally spent a week or so foraging about the Angelic City, greeting old friends, making new ones, and generally stirring things up in no inconsequential manner. They were both, of course, at one time anchored out here on the west coast and have more California contacts than the Collector of Internal Revenue.

We met the boys at various and sundry hosteleries and rathskellers during their whirlwind stay and, indeed, had the pleasure of recovering from both of them a small part at least of the swag with which Ed Trout practically absconded the last time he was out this-away. But all that is extra-curricular. What we really came to tell about was a cocktail and dinner party, staged by this twosome at the Jonathan Club which, we can assure you, was a producer. It gathered in one congenial convocation about as substantial a representation of western oil people as you'd ever want to see, and that the guests without exception found the occasion completely worthwhile was as obvious as a bluebottle fly in a martini.

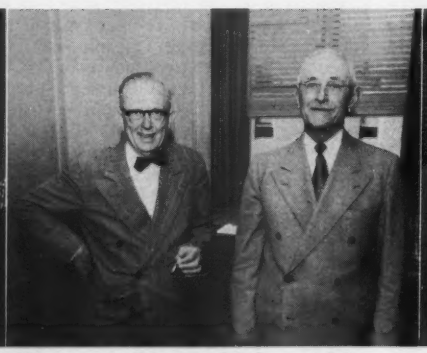
In an effort to conform to one of Emily Post's dictums, we were arriving at the Jonathan comfortably late when we ran into Jim McNeill, the petroleum engineering consultant—Jim either hasn't read Emily's opus or else doesn't understand it. In any case, he was leaving to take in a high school football game, so, having exchanged warm greetings

Al Collins, purchasing agent, Shell Oil Co. with 40 years service and Charlie Yeatman, chief mechanical engineer Shell Oil Co.

Hugh Barton, Ed Hamner and Sam Barclay, all of Humble Oil & Refining Co.

Ed Trout, vice president, Lufkin Foundry and Machine Co., Lufkin, Texas, and Fred Currie, Copperweld Steel Co.

Vic Fawcett, Lufkin Foundry and Machine Co., and Gordon Jackson, Drayer Hanson, Inc.



Bill Westergard, Hancock Oil Co. and John Augsburger, Tryad Service Corp.

Ron Swayze, vice president, and Paul Whiteley, purchasing agent, General Petroleum Corporation.

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Since that time Guiberson tubing catchers have proved their worth to thousands of producers in wells all over the world. They have saved well men countless dollars by preventing lost tubing, lost operating time and lost production.

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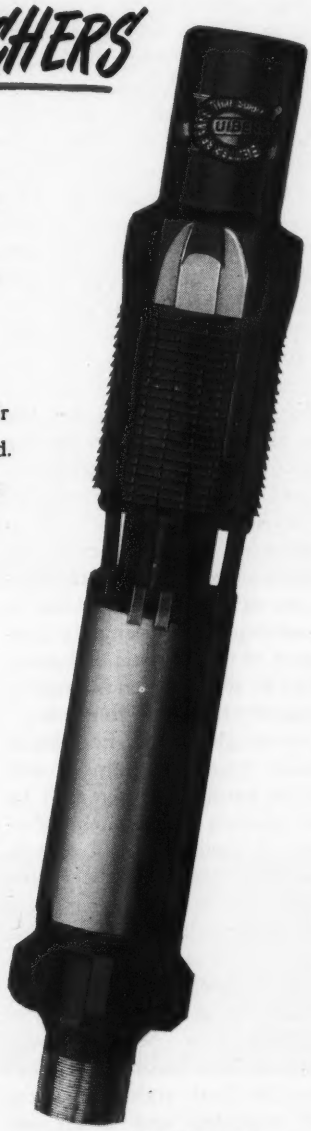

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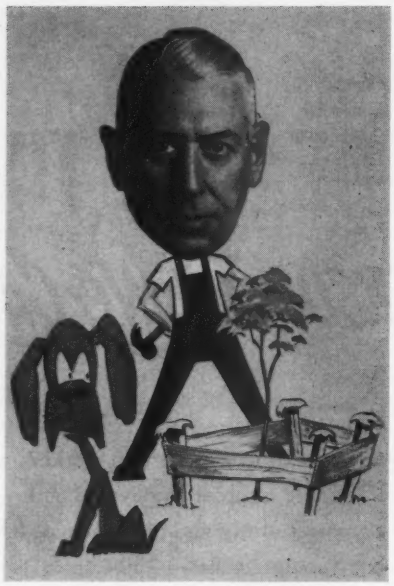
in Gaelic, we went our respective ways, and presently we personally found ourself in the Marine Room which was literally awash with mariners, if you know what we mean. Hardly had we stepped off the gang plank when we sighted, two degrees aport, Roger Bramble, the Lacy Oil Tool Company's general sales manager, and one of the greatest piscatorialists who ever hauled in a batch of seaweed in mistake for a yellowtail. Accompanying him was Mr. Petroleum himself, Bill Corey, Lacy's chief engineer, and one of the most competent, most modest, and most likable people in the oil business. Also from Lacy's was production engineer, Martin D'Errico, a chap who swings a nasty niblick—he once had a 300-yard drive but developed engine trouble and had to walk the rest of the way.

Forgot to mention, by the way, that besides being warmly welcomed to this delightsome soiree by the joint principals, we were hailed joyously, or so it appeared, by Glen Henderson and Vic Fawcett, two local Lufkinites of high station. Glen is an astute but gentlemanly proponent of that artistic endeavor, When he wins, which is usually, commonly termed "gin rummy." he never gloats—all he does is chuckle quietly to himself and rub his hands together as if he were playing a part in the Merchant of Venice. Vic, of course, is widely known as the Spade Cooley of the derrick groves and, incidentally, at the present time he is in the throes of composing a parody on the popular number, "I've Got You Under My Skin," which he will entitle, "I've Got You Under My Chin." They are both right nice lads, well regarded and much admired by the western petrolic people.

Getting back to the guests, however, we noted among them, Lee Osborne, the pleasant mannered Union Pacific Railway Company executive, who, with the help of Bill Tetsch, recently gave Glen Henderson and ourself a lesson in tile tossing that has forced us to revise our



A MAN OF DISTINCTION

Warren C. Johnson, the tall distinguished looking chap who is southern district manager of Standard of Cal's producing department, is a native of San Francisco, although for some reason we have always thought by his diction and enunciation that he emanated from upstate New York. That, however, merely shows how completely wrong a self-appointed expert can be.

In any case, Warren is a registered engineer with almost four decades of experience in the petroleum industry to his credit. He was educated in Bay Area schools, and began work with Standard as an engineer-draftsman at Murphy Coyote in 1916, and excepting for a 14-month period of service in the United States Navy during World War I, has been engaged in the production end of the business ever since.

Upon his return from the big fracas in 1919 he was assigned to design work on natural gasoline plants that were then under construction. Subsequently, following a series of important shifts that took him into Bakersfield, Taft, and Kettleman Hills, he was appointed manager of the organization and cost control division of the producing department, with headquarters in San Francisco.

Since then he has served successfully in various other responsible production posts all of which culminated in his elevation to the top spot in the southern district early in 1951. Extra-curricularly, Warren is a member of API's Pacific Coast Advisory Committee, the California State Board Water Commission District, and the operating committee of Long Beach Oil Development Company. He is also one of the earliest members of Petroleum Production Pioneers, and a former member of its board of directors.

In his spare moments he finds pleasure and relaxation in his garden at San Marino where the stimulation is an ever present element of surprise that usually asserts itself when he sees what comes up from what he plants. Basically, he is a pleasantly disposed, friendly sort of chap, easy and interesting to talk to, and consequently widely and well respected.

1954 budgets terrifically. Also flitting about the premises was Charlie Keeble, the uninhibited UP purchasing whiz, radiating the beneficence of his wide smile on all within reach. Then there were such luminaries as C. H. "Tut" Tuttle, the Standard Oil Company violin virtuoso whose favorite piece is "Dixie Bell"; Dick Backman, a buyer from the same august concern, just recently returned from yeoman service in Saudi Arabia; and other Chevronites of high repute, including Art Wilson, the estimable maintenance and construction superintendent; Charlie Beryle, production supe, and a fairway performer who tells us that at the moment of impact with the ball, the face of a golf club is traveling in an arc at a speed in excess of 100 miles an hour, which at last explains why the ball is driven so far into the ground; Warren Johnson, southern district manager, about whom the total lowdown will be found elsewhere in this issue; and Bill Cochems, no less, the amiable assistant superintendent of production and a California petroleum pioneer of more than usual prominence.

From Pacific Western we spotted purchasing agent Bob Engle, whose favorite pastime is arranging illustrated pasteboards in colorful and profitable sets and sequences. From Tide Water came Martin Newell, the real philosopher of the purchasing crowd, whose helpful homilies we have heard and enjoyed at many a 19er whingding. Then there was a Texas Company trio, consisting of Harold Puls, division manager of production, whose hobby is keeping track of world earth movements in his basement seismological lab; Woody Woodruff, assistant division manager of production, a right handy chap with either a fishing reel or a rifle; and Tom Bell, division engineer, the Vernon Castle of the petrolic west. We said a brief hello to Cec Martin, a big game fisherman from the Richfield Corp., who took so many albacore out of local waters last year the shortage this year has been awful; and Karl Kreiger, assistant

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manager of exploitation for the same concern, and a divot lofter to boot who makes the interesting observation that when a group of golfers are in the shower, it is impossible to tell whether they are singing or being scalded to death.

Several emissaries were present from Shell Company, to-wit, Ed Masters, area production manager, noted brother of that noted Stanfordite, Al Masters, graduate manager; Charlie Yeatman, chief mechanical engineer, probably the only practicing engineer in the country who is a member of Delta Sigma Chi, and a devout student of all that is best in literature; Al Collins, the good natured, 40-year-plus purchasing agent, who is mighty proud of that Shell emblem on his lapel. Humble Oil & Refining Company was represented by an interesting quartet composed of Ed Hamner, manager of the California area and one of the Petroleum Club's outstanding domino drawers; John Bell, assistant manager, and a lusty lambaster of the good earth, who holds an AAPG golf championship to prove it; Sam Barclay, petroleum engineer, a prominent Altadenan with an exceedingly green thumb; and Hugh Barton, assistant petroleum engineer, an enthusiastic alumnus of Texas A & M, who lives next door to Santa Anita for guess what.

A goodly number of Flying Horsemen were in the assemblage, among them Ron Swayze, vice president in charge of drilling and production and one of our leading authorities on Indian lore; Paul Whiteley, the imperturbable PA, and top people by any species of measurement; Doug Kingman, long time denizen of the Taft area, and now manager of joint ventures, so if you want to venture into any joints, see Doug; and Don Dawkins, senior equipment engineer, who has hauled enough different kinds of fish out of the ocean to start an aquarium. Signal Oilers in attendance were the Flying Dutchman, Frank Lortscher, whose flying mileage looks exactly like a bacteria count; Dick Smith, general production superintendent, whose cigar smoking propensities are at present under investigation by the County Smog Committee; Walt Greenfield, manager of the production department, and proprietor of what the English call a "caravan," in which he hies to hunting and fishing hotspots at appropriate intervals; and Paul Andrews, chief production engineer, PPP historian, and one of the neatest and most frequent peggers in the history of dominoes.

From Drayer-Hanson, Inc., came veep Gordon Jackson, noted heat engineer, formerly with Fluor back in New York; and from Amerada Petroleum Corp. we spotted Clint Eddleman, the purchasing chief who used to function admirably as a dispenser of activating aquas for PPP. Tom Wallace, top executive for Western Gulf, and domino genius, came along, bringing with him Jay Wharton, his right-hand man, another lad who knows his five multiples like nobody's business; Brig Brigham, manager of production, hotshot horticulturalist, and a lover of the chancy pastimes; Roy Fly, ex-purchasing agent, presently on his way to Santa Tome, Venezuela, to work for Mene Grande; and his Western Gulf successor, Les Smith, who lofts as pretty a divot as you'd ever want to see.

"K" Kuehmsted, the chief engineer of Santa Fe Tank & Tower Company, was one of those present, and we seized the opportunity to get better acquainted, of which, more anon. Ted Getzler, the Ralph M. Parsons project engineer, was also one of us and we were delighted to learn that he is a regular Robin Hood with a bow and arrow. We never could do much in that line but we were always a sharpie at darts. It was right nice to see Irvin Funk, the Richfielder from Long Beach, again, with whose dad, "IB," we were thicker than thieves in our early Union Oil Company days at Wilmington. Then from the same organization was Mo Benson, district superintendent of Long Beach Harbor operations, known as the Benny Hogan of the waterfront; and from Texas Company, another waterfronter, Oscar Bourgois, the transportation expert. We even had a word with Bill Westergard, the famed 19er from Hancock Oil Company; John Augsburger, former

Irvin Funk, Richfield Oil Co.; Paul Andrews, Signal Oil and Gas Co. and H. O. Woodruff, The Texas Co.

William Corey, chief engineer, Lacy Oil Tool Co. and Glen Henderson, Lufkin Foundry and Machine Co.

Walter Greenfield, Signal Oil & Gas Co.; William Kinder, vice president of Emsco and Al "Dutch" Zwerneman, Atlas Pipe Co., Houston, Texas.

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Macrate executive, now with Joe Siegel in the Tryad Service Company; and that fine gentleman, Ed Stearns, from Universal Consolidated Oil Company, who is unquestionably the youngest (in behavior, that is) pioneer in western oil.

Frank Hardisty, the Long Beach Harbor Board higher-up who did such a nice job of expounding at the last Nomads party, was on hand to pay his respects to the co-hosts. So also was Henry Paulsen, the Bankline executive, who during a golf game sheds garments like a strip tease artiste, perhaps so that he can truthfully say he is going around in less and less; Fred Currie, the Copperweld biggie, himself an excellent host on many an occasion, now complimenting Ed and Dutch on the excellence of their hosting; Bill Lyte, the Douglas Oil Company veep, and one of our most respected citizens, doing the same. Then there were such interesting people as Monte Lindmoe, executive vice president of Southwest Welding—it's a lucky thing for Bing Crosby that Monte didn't choose to be a crooner; Bill Notts, the Lindmoe shadow who, we seem to remember, was foraging around these parts in the days of the Civil War, despite his youthful appearance; Vince Vandiver, the Seaboard chap, who is moving back to the Mid Continent and at that moment the Petroleum Club will lose one of its most popular lunch hour domino hands; and last but certainly not least, the current 19er Big Shot, Harold Davis, looking fitter than a fiddle and obviously none the worse for his recent illness.

The entire affair was a very nice gesture by a pair of very enjoyed and much appreciated by everyone present, including ourself. We heartily subscribe to all the complimentary remarks we have since heard and we herewith tender our thanks to hosts, Trout and Zwerneman, for a most refreshing evening, and wish them the most of the best in their respective enterprises.

By way of last minute roundup, the Petroleum Club Safari has been moved over to September 26 at Barneson Park and it is reported that one reconnoitering party operating in Brea Forest last week bagged a full grown gopher that tipped the scales. Don't forget, either, that Ventura chapter API will have its annual barbecue at Camp Comfort up Ojai way on Thursday, September 17. The PPP meets in Kern County Park, Bakersfield, for its fall barbecue on Saturday, October 3. Tal Ledbetter has succeeded Charlie Reichert as arrangements chairman, and is anticipating a large turnout for this event which will especially honor San Joaquin Valley old timers. Bill Brooks brings back greetings from Bart Gillespie up in Calgary where Bart is now in charge of exploration for British American.

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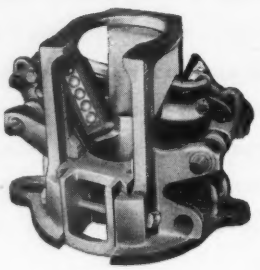

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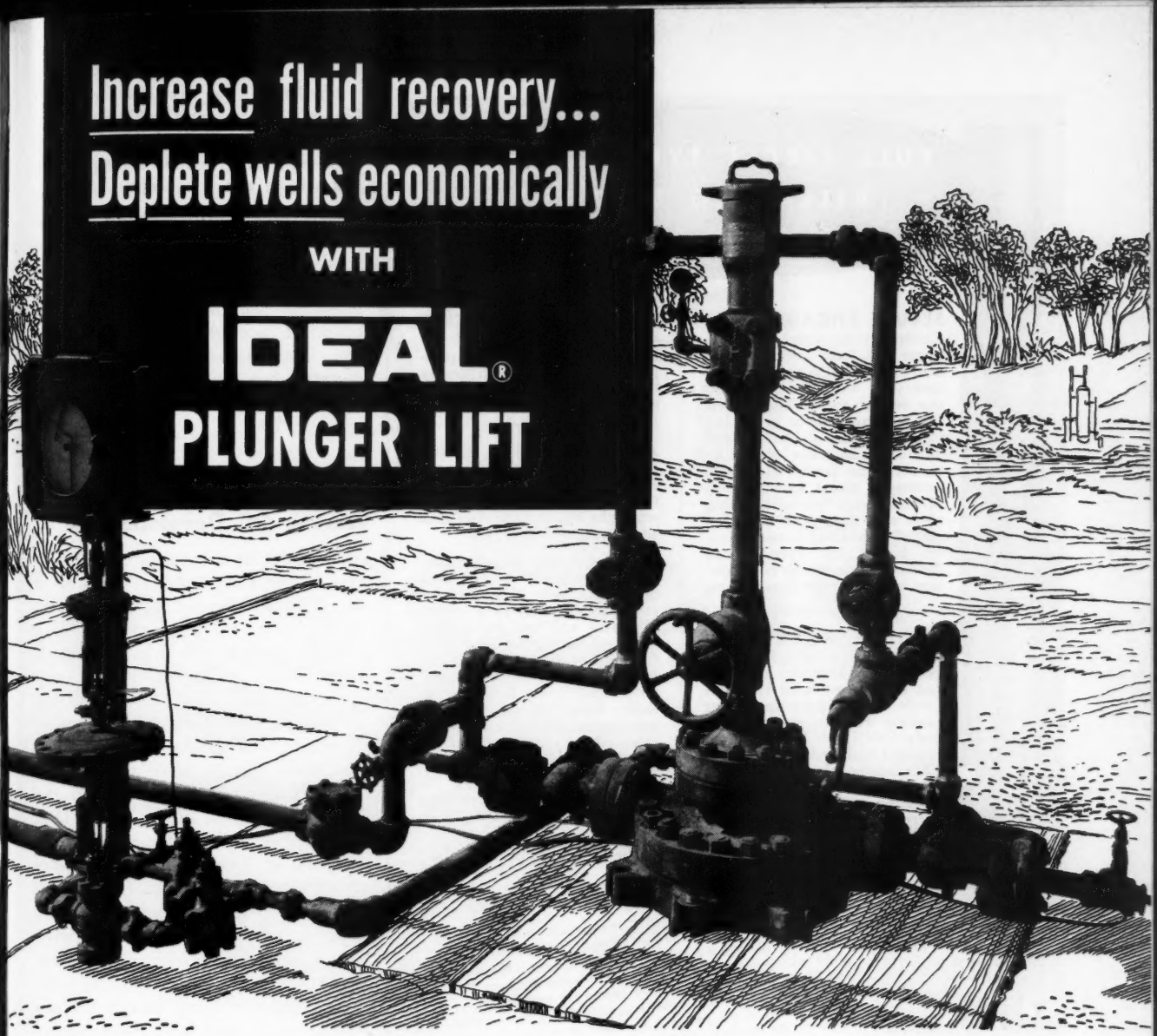

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Union Testing Brazilian Shale

Union Oil of California is conducting pilot shale retorting tests for the Brazilian government at Union's Wilmington refinery, it was disclosed recently.

Three hundred tons of Brazilian oil shale will be processed in an experimental retort to determine whether an 8,000 barrel per day commercial plant near Sao Paulo, Brazil, using Union's retort design, would be feasible. If constructed, this would be the first commercial shale oil plant in the western hemisphere, according to Dr. Clyde Berg, Union's manager of process development.

The pilot runs are being witnessed by a six-man commission representing the Brazilian government, headed by Jose Shore. Also present are representatives of the U. S. Bureau of Mines' synthetic fuels division, and engineers of the Kellogg Company and Foster-Wheeler Company, who may install the unit in Brazil.

Preliminary results indicate Union's process can achieve economies and operating advantages with Brazilian shale, which is fragile and has a high water content.

Large-scale utilization of Brazilian shale resources would be a boon to that country because at present 40 per cent of its dollar earnings are used for the import of petroleum products, according to members of the Brazilian commission. The country has no important sources of crude oil.

Nomads Visit Long Beach Harbor Oil Developments

The regular monthly dinner meeting of the Los Angeles Chapter of Nomads on August 12th was preceded by a trip through the Long Beach Harbor, the oil operations there being inspected on land and from the water. Engineered by Frosty Martin, President of the Board of Harbor Commissioners, the Nomads and their guests were first shown the effects of subsidence and the vast operation of filling in the land and raising the producing wells to heights of twenty feet and more above their present surface elevations. The party then went on a boat and viewed the operation from the water, riding over the bottom locations of 85 per cent of the wells drilled by the Long Beach Harbor Department, said wells being directionally drilled.

The party then went to the Pacific Coast Club for cocktails and dinner. Ninety Nomads and guests there heard the speakers from the Long Beach Harbor Department who were introduced by Frosty Martin acting as master of ceremonies. Bob Metzgar, director of publicity, outlined briefly what the harbor means to the residents of the Long Beach area; Frank Hardesty, chief petroleum engineer, described the work being done to offset subsidence and slippage and the precautions taken against earthquake movement; Alvin K. Maddy spoke very briefly on the early history of the harbor; and E. J. Amar gave a humorous talk on "Sheep Herding at Seventh and Pine, Long Beach."

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Field Development

San Ardo Area Wildcat Scene

Bishop Oil Company at last reports was moving steadily ahead with the drill not many hundred ft. below grass roots in its Alexander B No. 1 wildcat on Sec. 8-23s-11e, southeast of the San Ardo field in Monterey County. Location more exactly is approximately 1500 ft. southeast of Standard Oil's Alexander B No. 14-15, which the other month was taken over by Bishop. Objective of the current venture is the Aurignac sand. Newton Drilling Company is contractor. Ground also near the San Ardo field is being tried by General Petroleum Corporation with its Garrissere No. 67X-30 on Sec. 30-22s-10e. The project, being drilled by Pike Drilling Company, is still far above objective. Main producers in the San Ardo field are General and Texaco, with present total yield some 32,000 barrels of heavy crude oil daily.

In Monterey County's Peachtree Valley, Standard is expected to be going in the near future with its Rist No. 62-9 exploratory well on Sec. 29-19s-10e.

Pescadero Creek Test

Near Pescadero Creek and about two miles northwest of the old Sargent field, Union Oil Company is about to spud its Waugaman No. 1 wildcat well on Sec. 27-11s-3e, Santa Clara County. The old field has passed into oblivion as have many other of California's earliest oil areas. It was discovered by drilling near seepages in 1886 and for some years produced 16 to 22 gravity oil from depths between 1400 and 1600 ft. The field opener was Bradley V. Sargent, an independent operator of those times. Union's wildcat is a half dozen miles south of Gilroy, where LeRoy C. Gould is starting another wildcat, Hirasaki Farms No. 1 on Sec. 9-11n-4e. Gould a couple of months ago drilled on the old Gilroy sewer farm without obtaining commercial results, although showings of interest were reported picked up. This first test stopped no great distance above 3300 ft.

Near Vacaville in Solano County, Wa-Me-Co Drilling Company's Tavalero No. 1 wildcat well on Sec. 17-5n-1w continues to probe deeper at a depth last reported around 1000 ft. At Honker Bay, Union Oil's Union-Brazos-Ward No. 1 on Sec. 30-3n-1e at this writing was down 8300 ft.

Signal Oil & Gas Company's Signal-Monterey-Reclamation No. 1 wildcat on Sec. 20-12n-1e, six and one-half miles northwest of the Dunnigan Hills gas field in Yolo County, is drilling ahead in the shallower stuff. The project probably will be satisfied by a 5500-ft. exploratory journey. Shareholders of Signal, in passing, have voted to authorize changes in the company's capital structure so that a three-for-one split of both the class A and B common shares can be completed. The recent meeting made the necessary changes in the number of shares of common stock so that the board of directors can now go ahead and make the division. The W. W. Holmes, Operator, Mohawk-Cobb No. 1 test on Sec. 15-11n-1w in the Dunnigan Hills area is digging below 1000 ft.

Wells Abandoned

New dusters in Northern California Counties included B-N Development Corporation's Behring No. 1 wildcat on Sec. 11-17n-1w in the Princeton area and Humble Oil's Capital Co. No. B-1 test on Sec. 3-16n-1w in the Colusa area of Colusa County. They quit at 4200 and 10,133 ft., respectively. Also a production failure was The Texas Company's Wagoner No. 1 prospect job on Sec. 19-3s-2e in the Bardee area of Alameda County. The well went to a total depth of 9228 ft. At Livermore in the county, Texaco's Signal-Hancock-Garaventa NCT-1 No.

Richfield Oil Corp., operator for City of Long Beach, engaged International Drilling Co. to do the work on Well No. Parcel "A"—82 in the Long Beach area. Left to right: A. Berube, derrickman; B. H. McGuire, cathead; John Ortega, lead tong; Jack Melton, racker; Orlando Funk, driller.

NOTICE OF SALE OF OIL PRODUCING PROPERTIES

Your attention is invited to the proposed sale of all the oil producing properties owned by the Estate of Louise E. Dabney, deceased.

Said properties will be sold as a unit, and not separately. The sale will include all fixed lease equipment used in the operation of the oil wells included in the properties described below.

There will be excluded from said sale all oil produced and on hand at the close of escrow.

Terms of sale cash in lawful money of the United States on confirmation of sale. Ten per cent of amount bid to be deposited with bid.

Bids or offers to be in writing and will be received at the estate office at any time after the first publication hereof and before date of sale, and should be submitted on or before October 30, 1953.

Dated this 24th day of August, 1953.

MILTON H. PHILLEO,
As Executor of the will of said decedent.

The properties involved in this sale contain twenty-seven producing and two idle oil wells. The gross daily production from these wells is approximately three hundred sixty barrels. The net owned daily production is about two hundred eighty barrels. The oil is not under contract.

Of the above mentioned wells, two are located in the Huntington Beach field, one in the Rosecrans-Athens field, and all others in the Long Beach-Signal Hill field.

A recent engineering report and other data concerning these properties are available for inspection at the office of the Estate.

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1 wildcat on Sec. 22-2s-2e is digging ahead below 2700 ft.

Over in Glenn County, Sunray Oil Corporation is trying for its fourth new producer in the Beehive Bend gas field with Carriere No. 1 on Sec. 18-19n-1w, drilling at 1400 ft. The development is on a farmout from Ohio Oil Company. Sunray's General Petroleum-Huffmaster Unit No. 1 test on Sec. 24-19n-2w is drilling at 3500 ft. Work in the area previously has been limited to Sec. 18, where three wells already are on production.

Drilling has reached 3700 ft. without incident in B-N Development's Rocha No. 1, a wildcat project bent on turning up new gas on Sec. 16-2n-1w near Alton, Humboldt County. In the Petrolia area, West Coast Oil Corporation's West Coast No. 1 explorer on Sec. 21-1s-2w is digging at 1300 ft. with Otto Ellsworth Drilling Company in charge. On Sec. 17-1s-2w, Richfield is down 3500 ft. with its Walker No. 1.

In Ventura County, Standard is making satisfactory progress with the drill at a depth near 1200 ft. in its McGrath No. 13-11 deep test on Sec. 35-2n-23w at West Montalvo. It is a southeast offset job to the company's State No. C-1, completed a couple of months ago at 12,543 ft. Standard's No. D-2 test on the section is continuing to drill at 10,000 feet.

The company registered a duster at Sulphur Mountain by giving up at 8686 ft. its Freeman No. 1 wildcat on Sec. 21-4n-22w. Near Fillmore, Standard's Sespe Rancho No. 1 exploratory well on Sec. 27-4n-20w last was reported drilling at 6850 ft. Pike is in charge of the work.

Shell Oil Company has started M. J. Schiefferle No. 1 on Sec. 17-3n-20w, an outpost test one-fourth mile east of South Mountain field production.

Richfield has staked location for a new wildcat test in the Ojai area. The well, known as Scott No. 1, will go down on Sec. 1-4n-22w, one mile north of production. The company's Maxwell-Loel No. 1 test on Sec. 18-4n-20w at Timber Canyon is drilling ahead after losing and recovering fish at 5480 ft.

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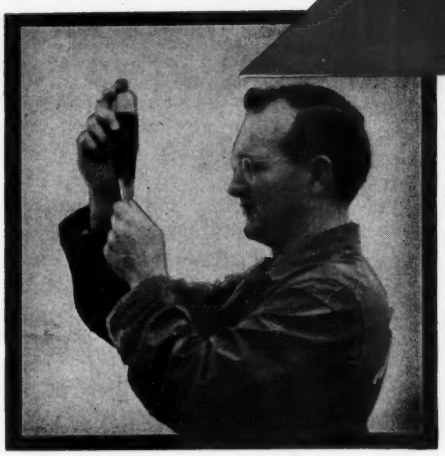

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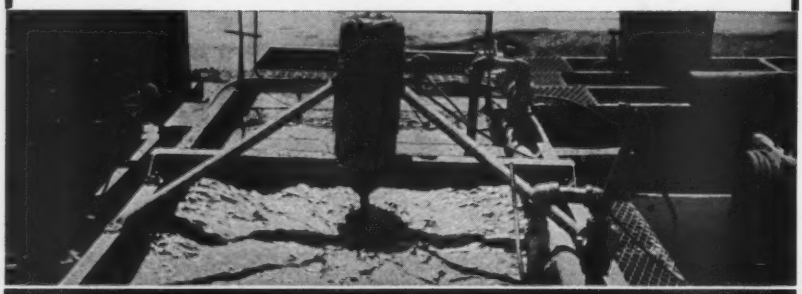

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Hills Company's Adobe No. 1 test on Sec. 16-4n-26w was last reported drilling at 1650 ft. Russ Watkins is the contractor.

In the vicinity of Cat Canyon, Douglas Oil has pulled out of its Douglas-Fletcher No. 1-28-22 on Sec. 22-9n-33w at an unproductive 3620 ft.

Silhouetting the West Casmalia Hills is Golden Bear Oil Company's Dolcini No. 1 wildcat on Sec. 32-10n-35w. It is down 2700 ft. or so.

R. C. Turnbull's Barham-Schmitz No. 4 wildcat on Sec. 12-7n-32w at Los Alamos is redrilling at 4600 ft., after going the first time down to 6803 ft.

Santa Fe Springs Wildcat Set To Go

Union Oil Company is all set to drill its Carmenita Comm. No. 2 wildcat well on Sec. 8-3s-11w, one-half mile south of Santa Fe Springs field production. The derrick is a short distance southwest of the intersection of Lakeland road and Carmenita avenue. Test drilling probably will persevere to 5500 ft.

In the Granada area, Standard of California's Coffman No. 1 wildcat on Sec. 18-2n-15w near the corner of Chatsworth and Woodley streets continues to drill down at 6350 ft. The company's Mission No. 5-1 test on Sec. 2-2n-16w in San Fernando Valley is ready to dig.

Shell Oil Company has working in the Brea Canyon field its first fully automatic trap farm in the area. Included are the most modern methods for separating, metering and recording crude production. Complete automatic facilities are on hand for testing up to 40 individual wells.

Fishing trouble has been an irritating factor in recent days at Bell Petroleum Company's Anderson No. 1 test on Sec. 20-3s-13w in the Rosecrans area. Down 4851 ft., efforts last reported were centered on sidetracking fish.

L. B. O. D.'s Well No. Z-33 at Long Beach. Left to right: R. E. Kopp, derrickman; D. J. Patton, floorman; A H. McConville, head well puller; W. P. Cooper, floorman.

In Solamint Canyon, indications are that drilling is at a depth near 1200 ft. in Western Empire Petroleum Company's Curran No. 1 wildcat on Sec. 20-4n-15w. L. S. Barnes is understood to share interest in the play. He was with the Elbe Oil Company when the Vedder discovery was made at Round Mountain in 1927.

In San Bernardino County's old Cajon area, Cajon Oil Company is working with its Beakley No. 1 exploratory well on Sec. 1-3n-7w. Bottomed at 5740 ft., the well has run liner.

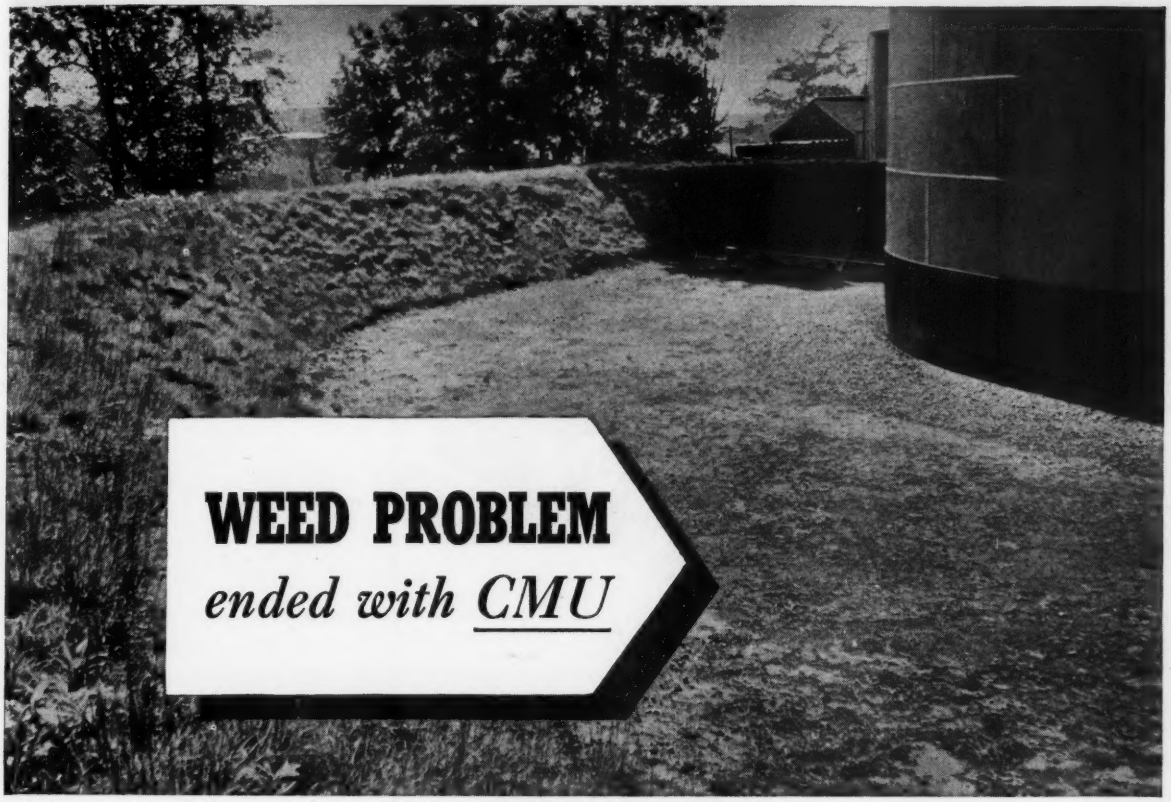
Baldwin Hills Zoning

The Los Angeles Board of Supervisors has adopted a new district zoning plan for the Baldwin Hills section. Due to the necessity for expansion of existing homesites, the board voted to limit any future oil drilling in the area and at the same time took notice of predictions by experts that the oil field may be exhausted in another 25 years. The new plan does not eliminate existing wells but any new wells must be kept at least 500 ft. away from residences.

Rothschild Oil Company's Lopicollo No. 1 northeast extension test on Sec. 12-3s-11w in the Leffingwell area is working with the drill at 1560 ft. The company's Fouquet No. 1 wildcat on Sec. 11-3s-11w in the area is down 7800 ft. Hathaway Company's Lochmiller No. 1 on the same section is in the completion stage between 8200 and 8300 ft.

With Fowler Drilling Company in charge, The Texas Company's Eadie No. 1 test on Sec. 23-3n-16w at Weldon Canyon is digging on down below 3400 ft. Texaco's Del Amo NCT-1 No. 2 on Sec. 2-4s-13w in the Dominguez area has been finaled at a plugged depth of 9980 ft., with completion details yet to come. Total depth is 9992 ft.

In the Atwood-Richfield area, Orange County, Drilling & Exploration Company, Inc., has added its Drilexco-State-Francis No. 1 on Sec. 32-3s-9w. The well last was reported producing 215 barrels a day from



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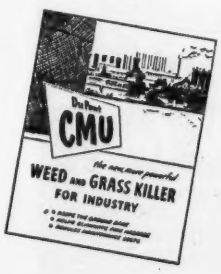

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sand topped at 4290 ft. Total depth is 4965 ft. On the same section the company is taking down Drilexco-State-Stern No. 4 at 3445 ft. Drilexco-State-Apalategui No. 1 is a location on the section.

Wildcat efforts of Shell at Tonner Canyon were of no avail. This was confirmed when the company abandoned its Keeler Comm. No. 1 on Sec. 6-3s-9w at 8104 ft.

Seaboard Test

Of considerable interest is Seaboard Oil Company's test preparing to drill on Sec. 24-6s-11w at Huntington Beach. Known as Thorpe No. 1, it is on a ribbon of land stretching for about 7500 ft. along the ocean strand. Although this first job on the property is slated to be a straight hole, followup jobs may be slant-drilled into the tidelands. However, future of a drilling program will await results from the vertical well. Ultimate drilling seaward would necessitate the company asking state approval of an offshore lease and right to pass under the Huntington Beach State Park.

Orange County's new Olive field has added its second producer, The Texas Company's Olive Unit One No. 2 on Sec. 7-4s-9w was completed at a plugged depth of 5760 ft. for about 50 barrels of 17 gravity oil a day. Location of the new well is some 600 ft. east of the discovery, which was completed in the interval of 5590-5741 ft. It is pumping a small amount of oil. Texaco holds 1000 acres in the area. Johnson Drilling Company was the contractor on Olive No. 2.

Tide Water Associated is drilling at 1968 ft. with Bryant Ranch No. 1 wildcat on Sec. 21-3s-8w in the Puente Hills, and at 9665 ft. with McNally No. 1-36 test on Sec. 22-3s-11w near La Mirada station. Camay Drilling Company is doing the work on the former, and Rocky Mountain Drilling Company on the latter.

At West Newport Beach, Victor W. Posta is ready to deepen the former Pacific Supply's Pacific No. 1 on Sec. 18-6s-10w. The well is down 3735 ft.

Dudley Ridge Eyed For New Natural Gas

Standard of California is all set to hunt for new gas in the Dudley Ridge area of Kings County. Work in this direction will be carried forward by the company's S. P. No. 33-1 wildcat well close to the center of the northwest quarter of Sec. 13-23s-19e. It is not expected that the project will drill more than 4000 ft. or so to tell the story one way or another at this location. Dudley Ridge in recent times has been more ore less out of the production picture. However, the field years ago blossomed forth as one of the few gas fields in the state. Pacific Oil & Gas Company opened the field in 1920 by drilling a test on Sec. 27-23s-21e to slightly below 2700 ft. This original hole was later abandoned due to collapsed casing. Standard's current wildcat is scheduled to go deeper than the early wells. It will be remembered that Pacific Oil & Gas later merged with Standard of California.

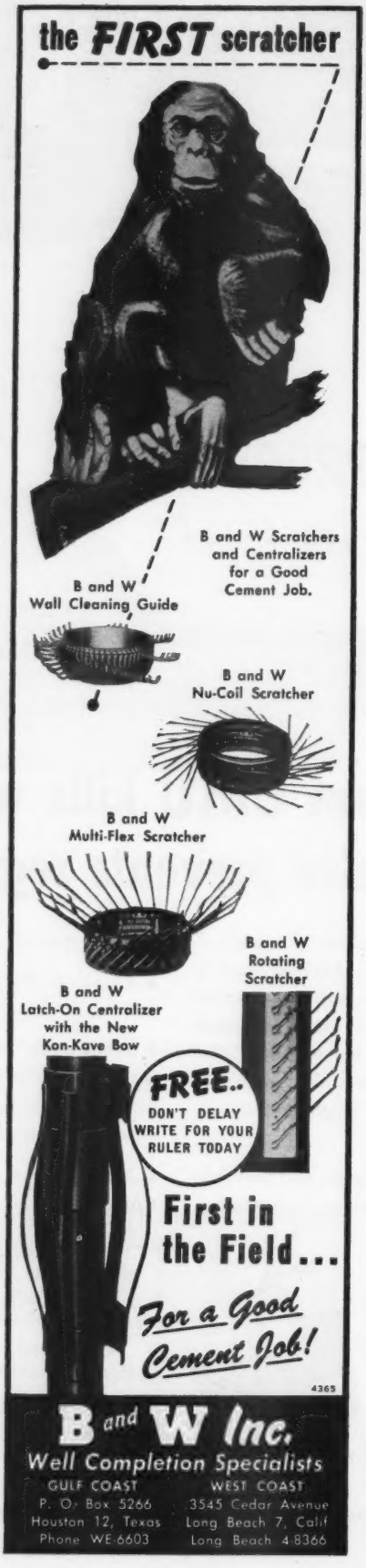
In the Pyramid Hills area of the county, Franco Western Oil Company's Norris Orchard No. 42A on Sec. 23-24s-18e is at a critical depth around 900 ft. or around the Point of Rocks sand. Norris Oil Company shares interest in the venture, which is a follow-up to the same combination's Norris-Orchard No. 42, some 330 ft. north of the current test, abandoned months ago at 3347 ft.

On the Hacienda Rancho, Contractor Green & Heiser is guiding the destiny of Tide Water Associated Oil Company's California Pacific Title Insurance Company No. 1-35 wildcat on Sec. 35-24s-22e.

Sequoia Oil & Gas Company, headed by William M. Kumler of Los Angeles, has abandoned its Phillips-Sequoia No. 1 wildcat on Sec. 32-33s-24e in Tulare County"s Alpaugh area. Located seven miles west of Earlimart, the wildcat was bent on proving up new gas production northeast of the Trico gas field. Drilled to a total depth of 3843 ft., final operational move was plugging and testing interval of 2393-2461 ft., with recovery 670 ft. of fresh water.

Merced Test Drills

With Clyde Hall handling the drilling work, Richfield Oil's Fancher No. 54-34 exploratory hole on Sec. 34-7s-14e in the Merced area of Merced County continues to dig on down below 4000 ft. The test, about 15 miles north of production at Chowchilla, is the company's first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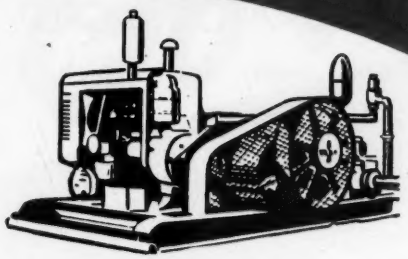

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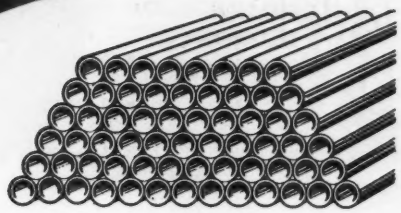

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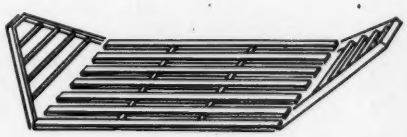

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wildcat on its expansive lease block in Merced and Madera Counties. Launching of the Fancher project was preceded by the drilling of a series of core holes in the area. Shell Oil Company also holds a huge lease block in the area and has already drilled one wildcat without attainment of commercial success on Sec. 10-10s-13e. In Madera County's Madera area, Trico Oil & Gas Company's Howard No. 2 on Sec. 36-11s-14e is a duster to 4000 ft. plus or minus.

Terminal Drilling and Production Company's Rig No. 17 undertaking remedial work for the Shell Oil Company, Covarrubia No. 1-37 well in the Capitan field. The crew members are as follows: left to right: J. D. Story, Well Puller; Dale Harris, Head Well Puller; E. W. Henry, Well Puller; W. L. Holland, Well Puller.

Patrick A. Doheny as operator is moving ahead toward critical levels with Noble No. 1 wildcat on Sec. 5-15s-17e one and one-fourth miles west of Raisin City, Fresno County. Doheny, by the way, recently leased 640 acres between fields at Greeley and Bowerbank. He took all of Sec. 21-29s-25e from Southern Pacific Company. The land lies two miles west of Calder field, high gravity oil producer from Stevens sands.

Ten Section Lively

Noteworthy in field annals is the fact that the Ten Section field after 17 years of steady production still embraces 112 wells actively accounting for approximately 4000 barrels of crude oil daily. Before Shell Oil Company launched its first wildcat there in 1936, operators in the area were giving their attention to the east and west sides of San Joaquin Valley where surface geology pointed to possible oil formations. Until Shell's discovery the valley floor was more or less ignored due to the

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absence of surface clues to possible underground oil structures. The company's discovery came in flowing 745 barrels a day on June 2, 1936.

On the west side near the Midway-Sunset field, General Petroleum's General American No. 33X-30 has been abandoned at 10,030 ft. It was on Sec. 30-31s-24e and it was active for eight months.

South of production at Elk Hills, W. W. Holmes, Operator, has written off at 5725 ft. W. P. Holmes No. 53-22 wildcat on Sec. 22-21s-24e.

Over Wheeler Ridge way, Richfield has scored with its first producer in that field from the Vedder oil sand zone. The company's KCLD No. 76-29 was completed at 6460 ft. for a present yield of 167 barrels of 44 gravity oil a day from the perforated interval of 6229-6457 ft. The zone previously had been tested but placed behind pipe by Eocene wells. A busy Vedder development campaign is planned for the field.

Black Canyon Test

Standard Oil at last reports was several hundred ft. below grass roots with its Wright No. 4-35 wildcat well on Sec. 35-18s-9e at Black Canyon, San Benito County. Up at Vallecitos, the Donald Frankel, Operator, Lewis-USL No. 1 prospect job on Sec. 34-16s-12e is digging around 1000 ft.

At Cholame, just across the Kern County line in San Luis Obispo County Seaboard Oil Company continues to poke for a new production with its Humble-Freeman No. 72-17 wildcat on Sec. 17-23s-13e. Depth last reported was 3700 ft.

A recent Kern County field event of more than ordinary importance was Union Oil's new zone discovery in upper Helbling sand in the Rio Bravo field. Carried to a bottom of 13,499 ft., the well was completed at a plugged back depth of 11,698 ft., flowing 86 barrels of 30.8 gravity oil a day, cutting 35 per cent. A later gauge showed 300 barrels of clean 35.8 gravity oil a day through a 12/64-in. orifice, along with 120,000 cubic ft. of gas a day. Rocky Mountain Drilling Company did the work. The new producer, known as Kernco No. 62-34 is on Sec. 34-28s-25e or about one-half mile northwest of the Rio Bravo discovery well, which was chalked up by Union in 1937 as the deepest well in the world at that time.

Superior also was not to be denied and has confirmed a new pool discovery in the 2nd Point of Rocks with its Cymric Unit No. 1 test on Sec. 22-29s-21e in the Cymric area. The well was completed at a plugged depth of 6550 ft. and at last reports was putting out 147 barrels of 27 gravity oil a day through a 14/64-in. choke. Total bottom of the well is 12,022 ft.

Property owned by the City of San Francisco in the McDonald Anticline area is getting a fresh going-over by B. C. Mackey. There he is digging below 1100 ft. with CSF No. 1 on Sec. 24-27s-19e, some 1900 ft. southwest of Ferguson & Bosworth's San Francisco No. 1, given up last May at 2300 ft.

Enterprise Oil Company is in the earlier acts with its M & B No. 4 wildcat on Sec. 21-28s-20e in the East McDonald Anticline area. Enterprise, incidentally, is contract driller on Wilrich Development Company's Richardson No. 1 wildcat on Sec. 13-10n-27w, southwest of the Russell Ranch field in Cuyama Valley.

In the Mountain View area, Union Oil's Kernco No. 86-9 test on Sec. 9-30s-28e is an abandonment at 9645 ft. The project was motivated by MJM & M Oil Company's find in the same sector. Be that as it may, it is evident that the productive fault blocks in this sector are not inclined to be large in size.

Temblor Try Dry

Among a new crop of Kern County shallow wildcat test failures is Esendee Company's Esendee Westates No. 1 on Sec. 25-29s-20e in the North Temblor area. Nothing of interest was reported in a drilling trip to 1078 ft.

L. B. O. D.'s Well No. W-125 in the Long Beach area. Left to right: Hap Smith, H. M. Sears, derrickman; Buster Moore, floorman; Harry Reynolds, floorman.

At Santiago Creek, R. E. Bering as operator is continuing a shallow drilling and development campaign. Ripley No. 23-81 on Sec. 23-11n-23w is in from 1280 ft. for 28 barrels of 12.5 gravity oil a day. The Miocene was topped at 735 ft. Ripley No. 23A-1 on the Section was cored and drilled to 380 ft. and abandoned. Other jobs are working.

Union has augmented production in Belgian Anticline field with another excellent producer. No. 54-24 on Sec. 24-30s-21e started off at 8475 ft. flowing 278 barrels of 36.9 gravity oil and 776,000 cubic ft. of gas a day through a 24/64-in. bean. On formation test of the interval of 2915-3000 ft. with the A. J. West, Operator, TWA Fee No. 3 on Sec. 15-30s-21e, the well flowed clean 35 gravity oil at the rate of 865 barrels daily. Hagestad Drilling Company took the well down. Engineering work was handled by Ted Easton and Lev Sacre.

Gene Drilling Company, Inc., and Oceanic Oil Company are drilling in the relatively shallower formations with ROP No. 43 wildcat venture on Sec. 30-13s-17e in the Herminghaus area of Fresno County. Gene Reid is guiding the drilling destiny of the project.

Williston Leases Figure in Farmouts

Operators, bolstered by attractive farmouts, are currently working on two blocks of leases held by Union Oil, Hancock Oil and Signal Oil & Gas in the Williston Basin. The three California companies hold jointly approximately 3,000,000 acres in the basin, with Union having a 50 per cent interest, while Hancock and Signal each holds 25 per cent. Midwest Exploration Company has acquired 8000 checkerboarded acres on a farmout in Towner County, N.D., 15 miles north of Cando, and is drilling below 1600 ft. with an exploratory hole. The company has tentatively planned two more wells in this category. S. D. Johnson, Wichita Falls, Tex., independent operator, has taken 5000 acres from the California organizations in Ramsey County, N.D., and is putting down the first of two wildcats programmed. The Johnson acreage is a half-hundred miles northeast of Starkweather, N.D.

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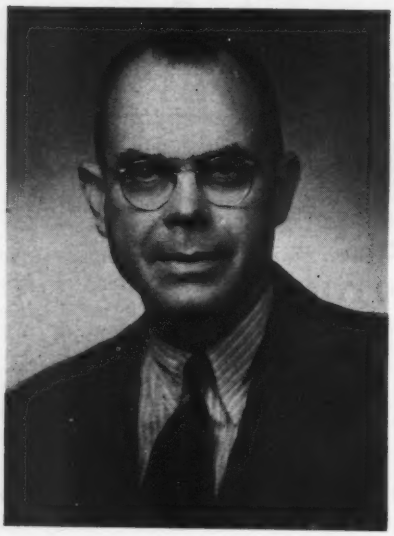
Personalities IN THE NEWS

Harger Named Gen. Mgr. El Segundo Refinery

Appointment of D. K. Harger as general manager of its refinery at El Segundo was announced by Standard Oil Company of California. He succeeds the late C. A. Pollard, who held the position for two years until his death last month.



D. K. Harger

Harger, who has been manager of operations at the El Segundo refinery since 1946, joined Standard in 1926, after receiving a degree in chemical engineering at Stanford. He worked for the company at Huntington Beach for a brief period as a laborer, then became an operator in the research laboratories at the refinery. In 1931 he had become foreman in charge of the experimental labs.

Transferring to the manufacturing department in 1934, Harger progressed steadily through a series of increasingly responsible positions until 1942, when he transferred to the company's refinery at Richmond as superintendent of process control. After several years in Richmond he returned to El Segundo as Manager of Operations.

Harger's home address is 330 Loma Vista Street, El Segundo. Wife and a son, Donald D., 24.

Breedlove on Special Assignment for Guiberson Corp.

Mitchell W. Breedlove, Sales and Service Representative for The Guiberson Corporation, has been given a special assignment in Venezuela, according to an announcement by Harry S. Zane, Jr., Sales Manager of Guiberson.

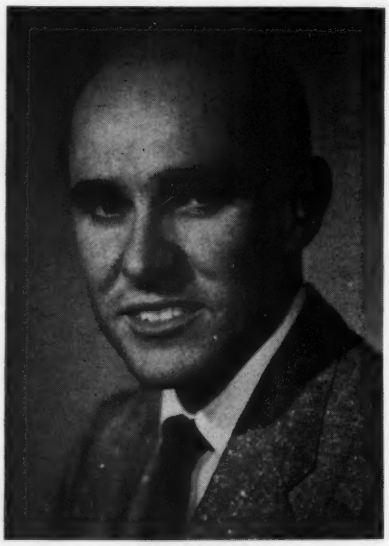
With temporary headquarters in Caracas, Breedlove will offer technical advice and assistance to drillers and producers on the use and applications of Guiberson oil field equipment. Breedlove has extensive first hand knowledge of this equipment, having been with Guiberson since 1936 in various capacities as machinist, engineer and sales and service representative.

Export representatives for Guiberson are Beckley, Haltom and Hickman of New York City. "We have great faith in the oil future of Venezuela," said Zane, who, in the near future, plans a personal tour of Venezuela and other South American oil producing areas.

Mitchell W. Breedlove

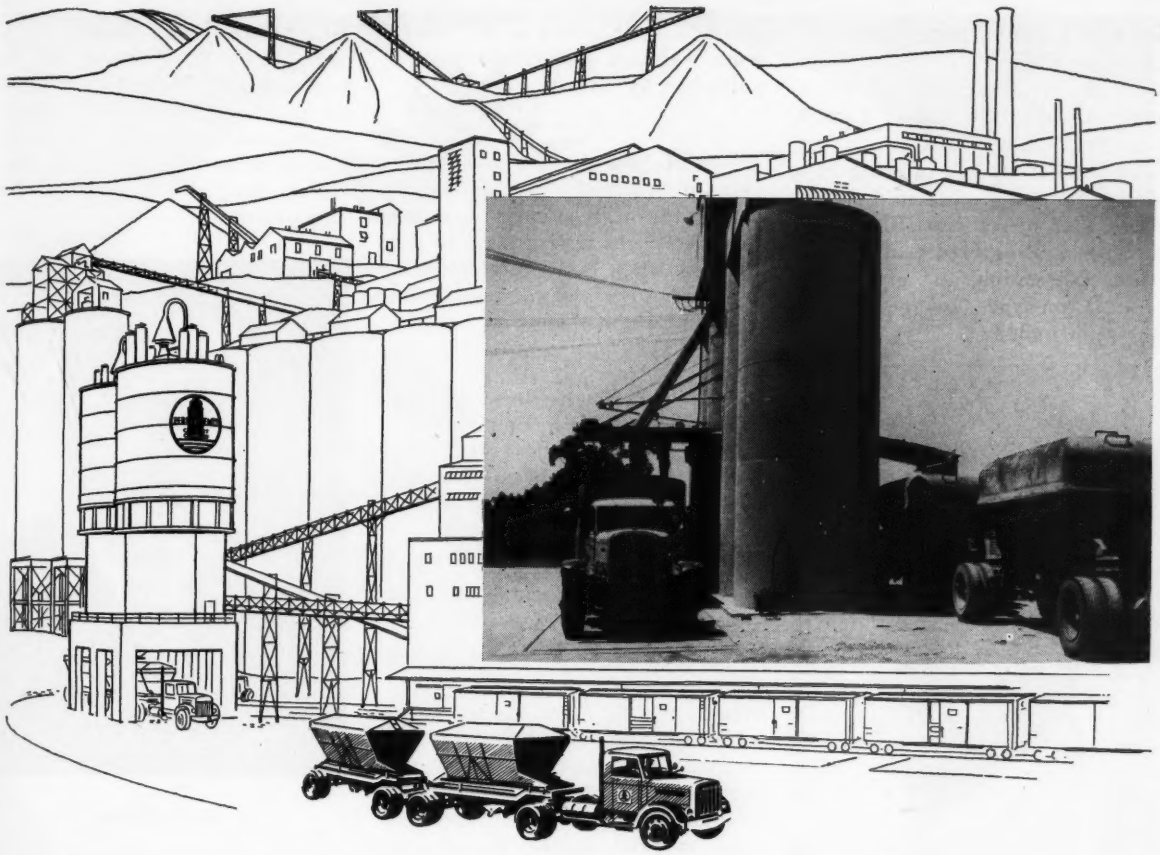
Pugh Named to High Post at Axelson

W. W. Greenway, Vice President of Pressed Steel Car Company, Inc., and general manager of the Axelson Manufacturing Company Division, has announced the appointment of John H. Pugh as director of advertising and public relations for the Axelson Division. Until recently Mr. Pugh was assigned as Psychological Warfare Officer with the United States Air Force. Prior to that he was associated with Marketers Incorporated and The Mayers Company, Los Angeles advertising agencies. Mr. Pugh is a graduate of Stanford University and a native of Los Angeles.



John H. Pugh

The 61-year-old Axelson Division is one of the nation's leading producers of oil well pumping equipment, engine lathes and aircraft landing gear components.



You name the hour!

plant-to-job delivery OVERNIGHT

On the job-On time

OIL WELL CEMENTING COMPANIES are especially benefitted by such a schedule of deliveries. Lack of needed cement, **on time**, could cause a loss of thousands of dollars and weeks of drilling time. Oil Well Cementers serving the industry have learned that PERMANENTE OIL WELL CEMENTS are available 24 hours a day—7 days a week—WHERE and WHEN they need it!

PERMANENTE OIL WELL CEMENTS are dependable under all conditions. Thickening times and ultimate strengths are always specified—assured by the uniformity of chemical composition through strict laboratory control—made possible by the facilities of the West's largest and most modern cement plant.

PERMANENTE
CEMENT COMPANY

PERMANENTE, SANTA CLARA, YOSEMITE AND KAISER BRANDS OF PORTLAND CEMENT AND PERMANENTE LIME PRODUCTS

OAKLAND • PORTLAND • SEATTLE
ANCHORAGE • FAIRBANKS • HONOLULU

Graver Tank Opens Los Angeles Office

Mr. W. M. Broxham, Vice President for Sales of the Graver Tank & Mfg. Co., Inc., East Chicago, Indiana, announces the opening of a sales engineering office in Los Angeles at 1250 Wilshire Boulevard. Graver is a recognized leader in the design, fabrication, and erection of conservation-type tankage for the petroleum industry.

Hubbert L. O'Brien

The Los Angeles office will be under thte direction of Mr. William T. Hudson, manager of the new Graver plant at Casper, Wyoming. District sales manager for the Los Angeles office will be Mr. Hubbert L. O'Brien.

Mr. O'Brien is a registered engineer in Indiana and is active in the engineering committee of the API, ASME and NACE. He served as general chairman for the ninth annual Conference and Exhibition of NACE in Chicago this spring, and at the annual API convention in Chicago last fall, he delivered for his sub-committee the group's report, "Evaporation from Conservation-type Tanks—a Practical Review" as part of a symposium on evaporation loss. At the 1952 Annual Meeting of the ASME, Mr. O'Brien was presented the Pi Tau Sigma Gold Award for "outstanding achievement in mechanical engineering within ten years of graduation." Mr. O'Brien is the author of a number of technical articles and the editor of a definitive work, "Petroleum Tankage and Transmission," published by Graver.

Bob McInness, on whose land at Oxnard Standard Oil plumbed the depths the other month for a deep discovery, was a classmate of Ted Sterling when both were attending Stanford. Petroleum surely was good to both of them.

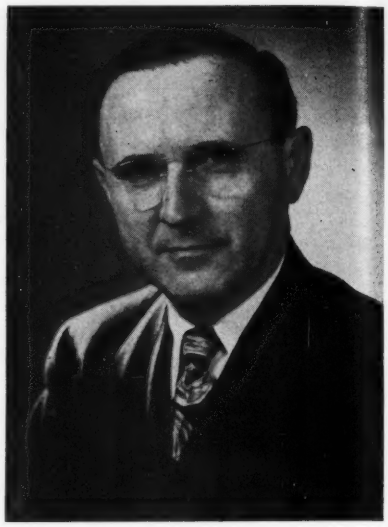
Veteran oilman Bert Brunwin, driller for Western Empire Petroleum Company and the L. S. Barnes' Curran No. 1 well in the Placerita area, was associated with Barnes when the latter's Elbe Oil Company opened new Vedder production at Round Mountain in 1927.

Three months ago handsome Harry Rothschild celebrated the purchase of a $275,000 85-foot Diesel yacht from Henry Doelger of San Francisco by entertaining Bay area newsmen with a party and cruise around the Golden Gate. Harry now, who is head of the fast-growing Rothschild Oil Company at Santa Fe Springs, is on an extensive cruise of Mexican waters. The former owner of the yacht was a prime developer of the Westlake district of Daly, Calif. It was built for him in 1951 by Stephens Bros. of Stockton.

The Bishop Oil Company of San Francisco announced the election of Dwight L. Clarke, president of Occidental Life Insurance Company from 1944 until his retirement in 1950, to its board of directors. Clarke succeeds William W. Mein, founder and president until elevation to the board last May. Mein will continue to serve in an advisory capacity. Clarke also is a member of the board of the Citizens National Bank, Producers Cotton Company of Fresno and Producers Cotton Oil Company of Phoenix. He is past president of American Life Convention, former director of the Los Angeles Chamber of Commerce, and for the last three years has been president of the Los Angeles County branch of the American Cancer Society.

Al Forrow Joins Kobe

E. W. "Al" Forrow has been named Kobe's Manager of Perforated Sales according to a recent announcement by L. T. Wold, Vice President and General Manager of Kobe, Inc., division of Dresser Equipment Co.



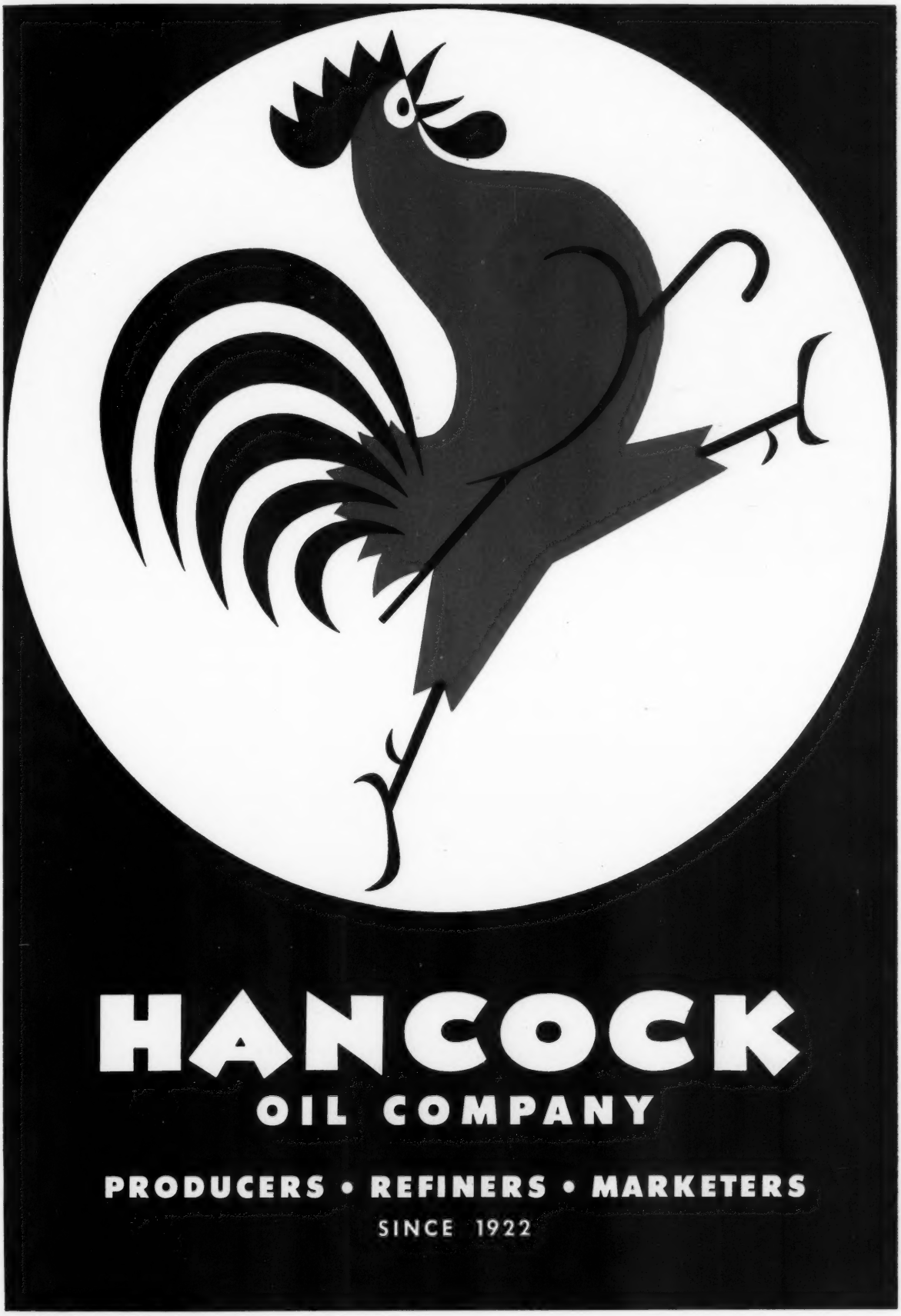
E. W. Forrow

Forrow brings to the position a wealth of experience, having been in the oil well equipment business since 1919. Starting with Union Oil Company in Orcutt, California, he made the Santa Fe Springs boom in the twenties and from that time on has been active in California, Mid-Continent, Gulf Coast and South American markets.

One of the first members of Security Engineering Co., he spent eleven years with them and filled the position of Vice President and Sales Manager. Other experience includes association with E. B. Wiggins Oil Tool Co. during which he invented the Wiggins Reamer, and management positions with Byron Jackson, Harvey Machine Co. and Power Rig and Equipment Co.

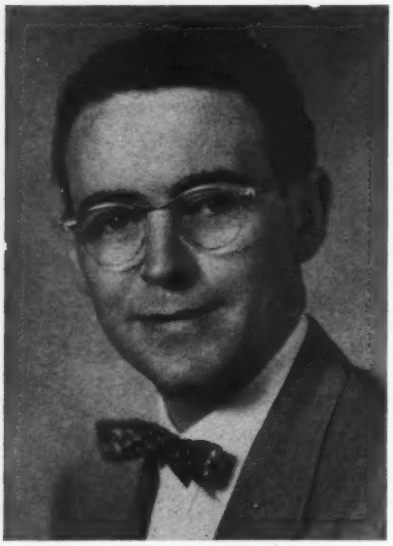
In his new position with Kobe "Al" Forrow will headquarter at the company's Perforating Plant, 2875 Cherry Avenue, Long Beach, California.

Up and around after a wee bit of surgery is George O'Brien, Standard Oil of California vice president at Los Angeles.


HANCOCK
OIL COMPANY
PRODUCERS • REFINERS • MARKETERS
SINCE 1922

New Sales Engineers for American Meter Company

Mr. C. B. Dushane, Vice President-Sales of American Meter Company, has announced the appointment of two new Sales Engineers.



R. G. Campbell

The two new men are R. G. Campbell and H. H. Holmes. Mr. Campbell is now a representative with the Los Angeles office of the company and Mr. Holmes is now a representative of the company in Western Oklahoma and Kansas.

Mr. Campbell attended the University of California at Berkeley and was with the Southern California Gas Company before becoming a member of the American Meter organization. During World War II, he served in the infantry and was awarded the Combat Infantry Badge, Purple Heart, Bronze Star Medal and a Presidential Citation. He is a member of the Southern California Meter Association and the California Natural Gasoline Association.

Mr. Holmes received a degree in Mechanical Engineering at the University of Texas. After experience with North Electric Manufacturing Company of Ohio and Refinery Supply Company of Tulsa, Oklahoma, he joined American Meter Company, Westcott & Greis Division, Tulsa. He served with the Army Signal Corps in the South Pacific during World War II. He is a member of the Tulsa Chapter of Instrument Society of America.

Marcel Schlumberger Dies Suddenly

Marcel Schlumberger, co-founder with his brother of the internationally known Schlumberger Well Surveying Corporation, died suddenly August 19th in France at the age of 69.

Mr. Schlumberger was a frequent visitor to Houston, and at the time of his death served on the board of directors of the corporation he helped found. Mr. Schlumberger was last in Houston in May when the corporation formally opened its new $6,000,000 Houston headquarters for the United States and Canada.

Born in Guebwiller, Alsace, in 1884, Marcel Schlumberger studied in Paris. He was graduated from Ecole Centrale in 1907 with the degree of civil engineer. He was of an inventive nature, with a very keen mind and concentrated his studies on technical research. He served as special adviser to a number of French enterprises until he resigned to become associated with his brother, Conrad, in 1919 to devote himself entirely to their work in the development of electrical prospecting techniques. The electrical logging of oil wells was the outgrowth of these early studies. Refinements of the pioneer Schlumberger electrical logging methods have since proved an invaluable contribution to oil exploration and production. Evidence of the importance of the work of the Schlumberger brothers is best indicated by the awarding in 1941 of the Anthony F. Lucas gold medal by the AIME for distinguished achievement in the technique of finding and producing oil.

After his brother's death in 1936, Marcel Schlumberger became president of the corporation. He served in this capacity until after World War II. He resigned from his duties and routine responsibilties as president in the early part of 1946 in order to devote more of his time and energy to research and new developments for the corporation. His son, Pierre Schlumberger, then became president in June, 1946. Marcel Schlumberger remained active in the corporation as a member of the board of directors and in research and engineering studies until his death.

Survivors in addition to his son include his widow, Mrs. Marcel Schlumberger, and two daughters, Mrs. R. Seydoux and Mrs. P. Primat.

C.N.G.A. 28th Annual Fall Meeting

A full two-day program of technical discussions and papers of general interest will be presented at the California Natural Gasoline Association's 28th Annual Fall Meeting at the Los Angeles Ambassador Hotel on October 8th and 9th, 1953. This announcement was made by D. R. Arnold, General Chairman, after reviewing the completed program with his committee of S. A. Bradfield, Southern California Gas Company; M. W. Kibre, General Petroleum Corporation; Paul Magee, The Ohio Oil Company; Wm. R. Runbeck, Guy T. Martin & Company; R. W. Todd, Pacific Lighting Gas Supply Company; E. W. Walker, Western Gulf Oil Company; J. H. Watson, Union Company, and R. E. Williamson, The Cooper-Bessemer Corporation.

The opening day, October 8, 1953, will present a program of forums and symposiums on gas gathering, engines and compressors, laboratory techniques and plants and processing. This program has been set up to satisfy a wide diversity of interests within the petroleum industry.

A field trip through the Los Angeles Refinery of the Union Oil Company will be of great interest as the tour is designed so that those attending will hear described and see the Thermofor and Fluid Catalytic Cracking Plants with a total capacity of 57,000 barrels per day, Light Hydrocarbon Recovery Facilities, Hydrogen Sulfide Recovery System and the Crystalline Ammonium Sulfate production from waste materials. This trip will be in place of the regular Friday morning general session.

Friday afternoon, October 9, 1953, such speakers as E. E. Pyles, Monterey Oil Company; Dr. Harrison Brown, Caltech; Harold P. Huls, Public Utilities Commissioner, and M. E. Spaght, Executive Vice-Pres-

Greatest Gasoline Development in 31 Years!

Up to 15% more power
Up to 150% more spark plug life

TCP* a Shell discovered additive, now blended into Shell Premium Gasoline, puts an end to greatest cause of power loss in automobile engines.

Strange as it may seem, the majority of cars on the road today are not putting out their full horsepower.

Perhaps you may have noticed that your power "falls off" especially when accelerating, climbing a hill, or driving on the open highway.

The reason is that, in the average engine, deposits are constantly accumulating on the spark plugs and in the combustion chambers. They actually "short-circuit" your spark plugs and cause pre-ignition of the fuel mixture, especially when you want extra power and "step on it" hard!

To overcome this condition, Shell Research discovered TCP—a remarkable fuel additive which has the property of counteracting the power-wasting effect of these deposits.

As a result, Shell Premium Gasoline with TCP additive gives you up to 15% more power, up to 150% more spark plug life, *plus an increase in gasoline mileage.*

Shell Premium with TCP is the most significant development in gasoline since the introduction of tetraethyl lead in 1922.

Shell Premium with TCP quick to act

So rapidly does Shell Premium with TCP additive counteract the deposits on spark plugs and in combustion chambers, that you'll feel your engine's had a tune-up before you've finished the second tankful. You enjoy that new car pep again.

NOW IN YOUR TOWN
but only at your Shell Dealer's

TCP is Shell's trademark for the remarkable additive originally developed by Shell Research for aviation fuels. Until now has been largely restricted to military aircraft.

Now at all Shell Dealer Stations.

*Patent applied for

SHELL PREMIUM GASOLINE

The Most Powerful Gasoline Your Car Can Use

SHELL

ident, Shell Oil Company, New York, will be heard.

It is stressed by the committee that membership is not required to attend these meetings and they are open to any member of the industry who is interested in being brought up-to-date on the industry in which he is employed.

Under the chairmanship of Fred Carter, Carter-Jones Company, the two day session will be concluded with the "Siesta Hour" and the Annual Banquet topped off with an entertainment feature that no one will want to miss.

V. H. King and E. M. Gray, General Petroleum Corporation executives, have returned to Los Angeles after completing the second annual nine-weeks Executive Development Program sponsored by the Graduate School of Business at Stanford.

Paul Teas, Dallas, Texas, oilman, during attendance at the recent Del Mar Turf Club meet, somehow got mixed up in buying his tickets for the daily double and didn't know until Prince Reigh had won the second race that he had a $10 ticket that would bring him more than $1100. Friends said he gave the money toward college education for a little colored boy working for him. Speaking of Texas, where so many present California operators also hold some interest, that state's first oil millionaire was W. T. Waggoner. As a matter of fact, he was looking for water for his livestock on his half-million-acre ranch when a sequence of events led him to the discovery of oil. Oilman H. L. Hunt of Dallas is credited with being worth upwards of $25,000,000.

John Schumacher, widely known attorney and Surfland Oil Company president at Los Angeles, is back at his desk after several weeks' illness.

M. W. (Mel) Sheppard, whose engaging and sincere personality has won friends by the thousands, has celebrated his 20th year with Shell Oil Company as land manager for the Pacific Coast area. S. F. (Sam) Bowlby, vice president, presented him with the traditional emerald-studded service emblem.

Harold Turner has returned to Saudi Arabia following a visit of several months at Grover City in San Luis Obispo County. Turner has worked with Standard Oil of California for 13 years and he has been on vacation in the United States since early in March.

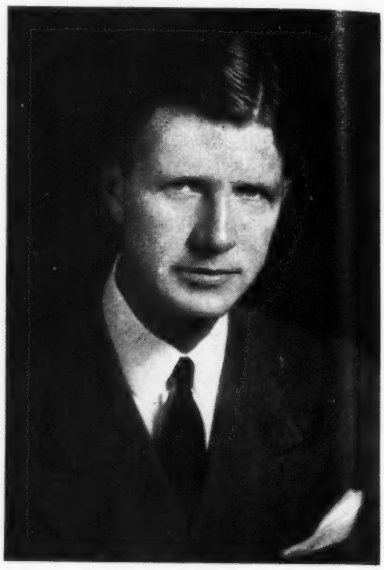
Wm. Ross Cabeen and Associates of Los Angeles, Denver, Midland, and Oklahoma City, announce the appointment of C. Kimball Ham as a geologist in their Los Angeles office. Ham will replace Dr. Burdette A. Ogle who was recently transferred to Denver, Colorado, as Rocky Mountain district geologist for the firm.

Ham graduated from Yale University in 1948, following three years as an officer with the U. S. Marine Corps. In 1951 he received his M.A. degree from the University of California, Berkeley, and then joined Union Oil Company in their Santa Paula office. Ham brings to his new duties some five years of experience in California geology as well as experience in Utah and the Dakotas.

Three members of the Los Angeles Desk and Derrick Club check last minute preparations before their departure from International Airport via United Airlines to New York City and then a three-weeks' tour of Europe. Miss Georganna Casey, Marian Black, General Petroleum Corporation, and Miss Rose Pelous, Union Oil Co., were in the group of 22 Southern California oil women leaving Los Angeles September 1st. From New York City, September 4th a total of 73 oil women will fly on a chartered Sabena for the European tour, sponsored by the National Association of Desk and Derrick Clubs

Thacher Succeeds Gaylord At Calif. Research

Election of John T. Thacher as a vice-president of California Research Corporation was announced recently following a meeting of the board of directors of this subsidiary of Standard Oil Company of California.



John T. Thacher

During the war Thacher worked in Washington with the War Production Board and the Petroleum Administration for War, where he served as executive secretary and as special assistant to the deputy administrator. Since then he has been successively manager of Standard's Gas Division, and of its producing operations in Southern California.

At California Research Corporation Thacher will take over the direction of the oil field research program now headed by E. G. Gaylord, who is retiring on October 1.

Gaylord, who has served as a vice president and director of California Research since 1947, is a petroleum engineer whose California oil field experience dates back to 1911.

He joined Standard in 1926 as Chief Petroleum Engineer with the acquisition of Pacific Oil Company. During his years as an oil man Gaylord has achieved a national reputation in the field of oil producing, and was for many years chairman of the Advisory Committee on Fundamental Research on Occurrence and Recovery of Petroleum of the American Petroleum Institute.

THE WORLD'S A BETTER PLACE...

Thanks to the tremendous advances in mechanical science during the past decade, our world's a better place to live in today.

Air science now permits us to cover more ground... to do more of the enjoyable things of life in less time. New applications in farm machinery help us produce more goods for our nation's food basket. Improved industrial techniques allow us to turn out more of the products that make our lives richer and fuller.

Through all these advances, the oil industry has kept pace with mechanical science, producing the complex fuels and lubricants to make the engines run and the wheels turn.

For just as mechanical science progresses, so does petroleum science continue to improve and refine its products to meet the growing needs of our people.

GENERAL PETROLEUM CORPORATION

A Flying Red Horse Company

Mobilgas

11-53

Rocky Mountain NEWS

Colorado—Idaho—Montana—New Mexico—Utah—Wyoming—Western Canada

Colorado

Anderson-Prichard Oil may complete its No. 1 Govt. A in the Morrison, where 3800 feet of oil was recovered on a test of the interval 6002-34 feet. A test of the Entrada was scheduled, however, before a final decision. The Entrada was topped at 6285 feet, and some oil shows were found in the zone. The well is in se se ne 17-4n-95w, Moffat County.

In Sedgwick County, Stanolind Oil and Gas Co. was preparing for further tests of the No. 1 Donaldson, c se ne 26-10n-47w, after recovering 2,254,000 cubic feet of gas per day from the D sand at the interval 3829-70 feet.

Lowell and Daniels recovered 4000 feet of oil from the No. 1 Bonham C-12 in sw ne se 27-9n-55w, Logan County, and were preparing for completion. The recovery was from the interval 5386-5402 in the I sand, which was topped at 5387 feet.

Plains Exploration and Dunn and Boreing failed to find production in the No. 1 Manual, nw ne ne 32-7n-54w, Logan County, and plugged and abandoned the well after drilling to 5253 feet total depth.

In Rio Blanco County, Continental Oil and English Oil Companies have staked location for the No. 1 Govt., ne nw ne 31-4s-104w. This will be a test of the Urado Unit assembled by English Oil. Additional tests are also scheduled.

Wyoming

Sinclair Oil and Gas Co. will drill a Tensleep test of the Hansen Ridge area in Carbon County. The test will be the No. 1 Unit, se se nw 30-19n-89w and will be nine miles west of the Lake Valley area, in which Sinclair is drilling the No. 1 Nutting. The Tensleep is expected at 11,300 feet.

In Sweetwater County, Shell Oil Co. has staked location for a 5500 foot Wasatch test, the No. 33-35 Unit, in ne nw se 35-15n-99w. The acreage is in the Pine Buttes Unit, lying between the Hiawatha and South Baxter Basin gas fields.

The Texas Co. will drill an 8000 foot Mesaverde test in the Table Rock Unit, also in Sweetwater County. The well will be the No. 5 Unit, 2-18n-98w.

Stanolind Oil and Gas Co. was coring below 6800 feet after recovering black oil in an initial test of the Dickie Unit in Hot Springs County. The well is the No. 1 Unit, nw sw nw 25-45n-101w, and production is from the Tensleep.

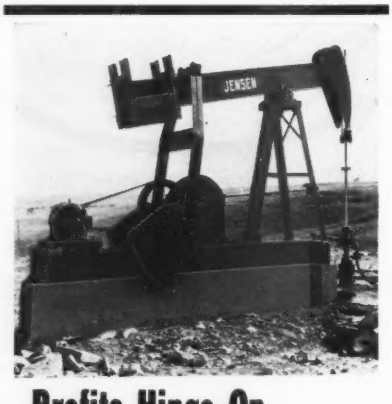
The No. 2 Burke Ranch Unit in Natrona County has been gauged for production of 65 barrels of oil per day from the Dakota, to which it was plugged back after the Tensleep failed to prove commercially productive. The well is in nw nw nw 18-37n-78w.

After recovery of more than 500 feet of oil from the Tensleep, Sohio Petroleum Co. planned further test of that zone at its No. 1 Unit in the South Sand Draw area of Fremont County. The operator found substantial gas production in the Frontier and oil shows in the Phosphoria. The No. 1 Unit is in se nw se 36-32n-95w.

General Petroleum Corp. will test the Beckwith sands in an 8500 foot test, the No. 18-20 Unit, sw sw sw 20-28n-113w, the Tip Top area of Sublette County. The company has two other producers in the Tip Top Unit but the Beckwith sands have not been found productive up to this time.

Nebraska

Four wildcats in Kimball and Cheyenne Counties are being watched with interest. Lloyd Gray has staked location for the No. 1 Geu, nw nw se 21-14n-48w, Cheyenne County, on a farmout from McDannald Oil. Chicago Corp. and Republic Natural Gas are below 4430 feet at the No. 1 Beyers, sw sw se 5-14n-50w, also in Cheyenne



Profits Hinge On DEPENDABLE Pumping!

No need to remind any oil producer that breakdowns, continuous maintenance, inefficient operation cost money and dig deep into profits.

However, we DO want to remind you that profit consumers of this sort can be banished the day you start using JENSEN PUMPING UNITS. They are designed and constructed to afford rough usage and DEPENDABLE pumping, resulting in a saving of money and increased profits.

This DEPENDABLE performance of JENSEN PUMPING UNITS is a result of more than 30 years of continuously improving these sturdy units. Check the superiority of JENSEN PUMPING UNITS—NOW! Get in touch with your nearest Jensen Dealer, or write us at Coffeyville, Kansas.

STOCKED BY
ROBERT S. MOORE SUPPLY CO.
2852 Cherry Avenue
Long Beach 6, Calif. Phone LB 4-3058

LOVELADY SUPPLY CO.
3301 Cherry Avenue
Long Beach 7, Calif. Phone LB 40-5429

PETROLEUM SUPPLY CO., INC.
Fresno Highway
Bakersfield, Calif. Phone 2-2413

JENSEN BROTHERS MFG. CO., Inc.
COFFEYVILLE, KANSAS, U.S.A.
EXPORT OFFICE: 50 Church St., New York City

County. Mid-Continent Petroleum Co. is drilling around 4300 feet at the No. 1 Chaney, ne ne ne 27-13n-57w, in Kimball County, and Nebraska Drillers has staked location for the No. 1 Lynn, sw sw sw 20-13n-56w.

New Mexico

Magnolia Petroleum was drilling around 6100 feet at the No. 1 Hutchinson-Federal after recovering over 500 feet of oil at the interval 5205-29 feet. A test of 5501-21 recovered water. The well is in Sandoval County, in c nw sw 14-19n-34.

North Dakota

Amerada Petroleum's No. 1 May, which previously yielded recovery from the Upper Madison, has also revealed shows in the Red River. Operator was last reported drilling around 12,930 feet. The Red River was topped at 12,219 feet. The well is in the Fryburg area of Billings County, in c nw ne 9-139n-100w.

Midwest Exploration Co. will drill three wells on Towner County acreage farmed out from Union Oil of California Hancock Oil and Signal Oil. The first test will be the No. 1 Union Central Life Insurance, c sw se 24-160n-67w.

Stanolind Oil and Gas Co. has found oil shows at the No. 1 Starr, c sw se 21-152n-94w, in McKenzie County and was drilling below 9340 feet.

Western Canada

Canadian Gulf Corp. and associates operating a drilling program in the Erskine field of Alberta tapped 29 feet of pay sand in the D3 Devonian at the Gulf-Stanwell-Peterson 15. On drill stem tests the well averaged 1212 barrels of oil per day. It has been placed on production.

Also in the Erskine area, Oilwell Operators, Lt., have undertaken two more wells after bringing in their Erskine 4-12, in which production was found in the D3 Devonian. A potential of 22 barrels an hour was established prior to acidization, which was expected to be considerably raised after acidization. Operator is currently drilling an eastern offset to this well and a northeast extension to the area. The company is operator for Home Oils, Ltd., and Federated Petroleums.

Calmont was preparing to test its Rimbey No. 2, a southeast offset to its discovery well in the Lacombe area of Alberta. Calmont's Rimbey No. 1 is producing nearly 200 barrels of oil per day from the D3 Devonian, which was topped at 7893 feet. The second well hit this zone at a higher level.

A well being drilled by Zena Development, Ltd., and Dale H. Voss near Debden, Saskatchewan, will be a 3000 foot granite test. This is in the Prince Albert area and is the farthest north of any well in the province.

The Lufkin Line

By VIC FAWCETT

THE BOSS' VISIT

To millions of Americans, the letters E. P. T. have become the popular abbreviation for "Excess Profits Tax." This group of initials has more recently been tabbed by the taxpayers as the "short form" for Uncle's "Extremely Painful Take."

But to all of us here in Lufkin's Los Angeles Office, and to a multitude of friends throughout the industry, the initials E. P. T. belong to our recent visiting Vice President Edward P. Trout, better known as "Ed."

"Ed" traveled widely in these parts prior to his transfer to the home office at Lufkin, Texas, in 1942. At that time he moved out lock, stock and ration books, but left his heart here in California. Naturally, many return visits have been made since 1942, maybe two or three annually.

Never once has "Ed" failed to be impressed with the growth of this area in particular and the Pacific Coast generally, and especially the ever broadening acceptance of Lufkin Products. And, for this continued growth of our business, Ed Trout is deeply appreciative.

The loyal and valued patronage of customers like Union Oil, Shell Oil, Richfield Oil, Standard Oil, The Texas Co., Signal Gas, General Petroleum, Tide Water Associated Oil, Amerada Petroleum, Long Beach Oil Development, Humble Oil and Refining and many other oil producers, both large and small, have made Lufkin the world's largest manufacturer of oilfield pumping units.

And now, Gear Reducers and Gas Engines bearing the Lufkin nameplate, with the same earmarks of performance and durability, are taking their places in your refineries, on your pipelines, and in industry—to do a job.

When "Ed" Trout makes his next trip out we feel confident that once more he will be pleased with your continued acceptance of Lufkin equipment. For all this fine business we would like to join with "The boss" and say, "Thanks a million."

Vic Fawcett

(Lufkin produces the finest . . . Pumping Units . . . Gear Reducers . . . 2 Cycle Gas Engines.)

Vocational Training Program to Start

The Coastal Chapter of API in Ventura, California, is sponsoring a vocational training program involving the following subjects:

Electric Log Interpretation—with particular emphasis on the Coastal Area.

Mud Technology, a repetition by popular demand of a class given last fall.

Instrumentation—a class specifically meant for instrument men. It presents a practical approach to the theory of instrumentation and mechanical techniques employed in pressure control.

The classes are being held at Ventura Junior College and particulars as to hours, fees, etc., may be obtained from H. A. Buchanan, vice president of Bell & Burden, Rocklite Road, or by writing the same at P. O. Box 569, Ventura.

Wayne Harthorn, Shell Oil Company, is chairman of the API drilling fluid study group.

Floyd Glass Available For Credit Work

Floyd Glass, who will be well remembered by many in the oil business and who resigned some time ago as manager of the Oil Field Division of the Los Angeles Credit Managers Association, is desirous of getting back into that line of work with some California company.

Mr. Glass can be reached at 28 N. Marengo, Pasadena 1, California. Telephone RYan 1-6341.

"144,000 of our employees are enrolled in the Payroll Savings Plan"

C. F. HOOD
President, United States Steel Corporation

"The response of our employees to the Payroll Savings Plan for U. S. Savings Bonds is dramatic evidence of their conviction that Freedom is Everybody's Job. We are proud of their outstanding record in saving systematically in "E" Bonds, in thus adding to their financial independence as they give effective support to the nation."

Mr. Hood and his associates may well be proud of the Steel Corporation's Payroll Savings figures:

- 144,000 men and women of U. S. Steel are enrolled in the Payroll Savings Plan—an over-all employee participation of 52%—excellent for a company as large as U. S. Steel.
- the average monthly investment of a U. S. Steel Payroll Saver is $20.79.
- every month, these 144,000 employees invest $2,993,760 in personal security—and America's economic stability.
- in some U. S. Steel plants and subsidiaries employee participation runs as high as 80%.

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CALIFORNIA OIL WORLD

Kaiser Steel Has Record Year

Kaiser Steel Corporation directors, announcing record sales of $134,500,041 for the fiscal year ended June 30, 1953, declared a dividend of 50 cents per share on the common stock, the same as a year ago.

The regular quarterly dividend of 36½ cents per share of preferred stock was also declared by the board. Both dividends are payable September 30 to stockholders of record at the close of business September 14.

Henry J. Kaiser, president, reported that a 14 per cent increase in sales over the previous year was made possible by increased output of rolled steel products, reflecting primarily production from the company's new tin plate mill at Fontana, California.

Net income for the year ended June 30, 1953, was $9,121,284 as compared to $10,399,306 for the previous fiscal year. This was equivalent, after preferred dividends, to $2.12 per share of common stock as compared with $2.52 per share for the year earlier. This reduction is primarily the result of the fact that depreciation, depletion, and accelerated amortization charges were up $4,693,866 as compared with the previous fiscal year, and interest was up $1,853,940.

If the company had not charged accelerated amortization and if income taxes had been computed on the basis of normal depreciation, net income for the fiscal year would have been $11,321,300, equivalent to $2.80 per share of common stock. This method of reporting the company's net income would be permissible according to a statement of the American Institute of Accountants. However, the company has chosen to report its earnings after acceleratted amortization, which is the practice commonly being followed by American industry.

The common stock dividend was declared after the directors reviewed the results of operations for the fiscal year ended June 30, 1953, and studied estimates of future cash requirements for construction, and other corporate purposes. This action was in accordance with the policy of considering the dividend on common stock at the first directors' meeting following the close of the company's fiscal year, and does not represent the establishment of a regular dividend rate for the common stock.

In recounting the company"s activities for the fiscal year, Mr. Kaiser said that the rated ingot capacity of the company had been raised 12 per cent with the starting-up of a ninth open hearth furnace in January, 1953. In July, 1953, ingot output reached 106.4 per cent of rated capacity, equivalent to an annual rate of about 1,650,000 tons. This represents a three-fold increase over production for the peak war year of 1945.

In recounting the company's acnace was "blown in," raising pig iron capacity to a total of 1,300,000 tons annually. Coking capacity was increased 78 per cent during the fiscal year by completion at the Fontana plant of a new battery of ninety coke ovens. Extensive expansion and modernization programs were undertaken during the year at the iron ore and coal mines, where there are sufficient high-grade reserves to support the company's operations for many decades to come.

"The expanding population and industrial growth throughout the West have provided a sound basis for the expansion of the steel plant," Mr. Kaiser said. "During the past three years the population of the seven far western states increased by 2¼ million, accounting for nearly 30 per cent of the nation's population growth. California now has a population in excess of 12,000,000, the second largest state in the nation. Growth of western industry has out-paced population, and as the expansion continues it will increase the demand for steel."

Horton Vaportank Installed For Conservation of Vapor

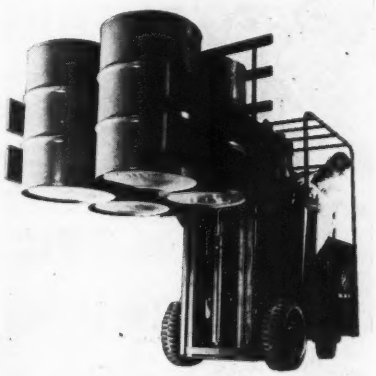
Hydrocarbon emissions to the atmosphere have been reduced by the installation of a new type of vapor recovery device at the Dominguez Refinery of Shell Oil Company, according to a statement by R. W. McOmie, Wilmington - Dominguez refinery manager.

The installation is the latest of a continuing vapor recovery program started more than 18 years ago and costing to date over $1,000,000. The installation, a 150,000 cubic foot Horton Vaportank, was inspected and approved yesterday by Gordon P. Larson, director of the Air Pollution Control District.

The Vaportank, a recent development of the Chicago Bridge and Iron Works, has been designed to recover essentially all of the vapors which normally would be emitted from two 3,200,000 gallon gasoline storage tanks. The tank is 64 feet high, 66 feet in diameter, and is equipped with an internal diaphragm of nylon and synthetic rubber. The diaphragm rises or falls as the connected storage tanks release or draw in hydrocarbon vapors and thereby prevents losses to the atmosphere.

This conservation program has now been accelerated to meet the requirements of Rule 56 of the air pollution control ordinance, McOmie said.

Hydrocarbon losses will be further reduced by repainting gasoline tanks with white paint. Recent studies by Shell Oil Company show that over one-third of the losses from conventional aluminum coated tanks my be saved by this method.



This new type of gripper arms for lift trucks is hailed as the key to handling of materials without pallets. The arms were developed by Shell Oil Company engineers, who estimate that elimination of pallets could save the firm as much as $750,000 a year. The thinness of the arms permits closestacking of loads for more efficient use of warehouse and shipping space. And since it depends more on friction than on pressure in lifting, the new attachment can handle heavy loads without crushing them. It is equally versatile in moving drums or packages.

THIS

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Stay-at-home wife: "Darling, how thoughtful. That hotel where you stayed during the convention sent me a blue nightgown."

"My husband is certainly easy on his clothes. He bought a hat ten years ago, had it cleaned twice and exchanged it four times in restaurants and it still looks as good as new."

A woman went to a psychiatrist because she found herself keeping secrets.

Why worry about who is boss in your home? You'll be happier if you never find out.

Steve: "Giving up smoking is the easiest thing in the world. I've done it hundreds of times."

New employee: "Do you give your employees two weeks' vacation?"

Boss: "A month. Two weeks when I take my vacation and two weeks when they go on theirs."

Private detective: "I trailed your husband to a saloon, then to a cocktail lounge, and later to a night club."

Wife: "Oh, that villain. What was he doing?"

Private Detective: "Trailing you."

Boss to Secretary: "Gad, I've forgotten where I'm supposed to meet my wife at 5 o'clock. You call her up and ask her where you can reach me at that time."

Once there was a little gal who claimed she was a good housekeeper. After each of four divorces, she kept the house.

"How did you happen to marry papa?"

"I was lovesick and took a pill."

"I don't see John nearly as much as I used to."

"You should have married him when he asked you."

"I did."

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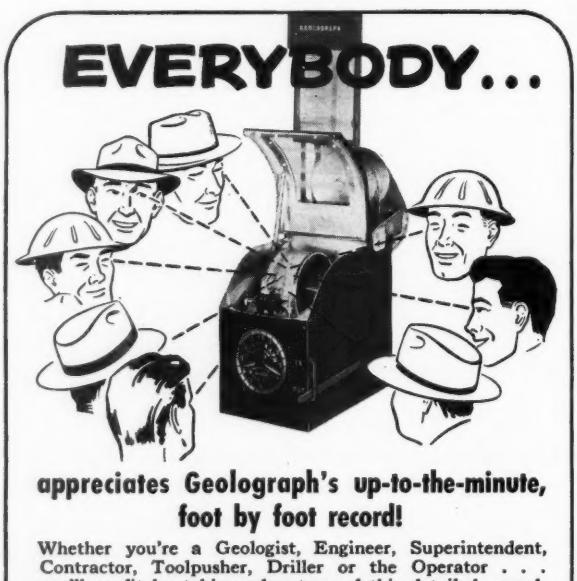

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